

# COMPUTERWORLD

## IBM romances Unix developers

Mainframe costs remain a barrier

By Craig Stedman

IBM is sending an SOS to Unix software vendors as it struggles to turn the mainframe into a client/server platform. But so far, the return answer has been a blunt one: Give us a break.

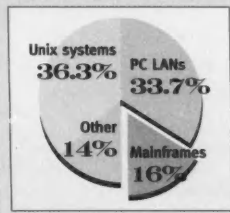
As in price break.

Joining users in the chorus calling for lower mainframe computing costs, Unix software developers said the expense of developing MVS applications must be sharply reduced to make the System/390 environment more appealing.

### Third class

Percentage of mission-critical applications developed for different platforms

(BASE: 1,215 COMPANIES)



Source: The Standish Group International, Inc., Dennis, Mass.

used to write mainframe applications at a PC or workstation, the sources added.

Unix system vendors such as Hewlett-Packard Co. routinely give away development machines. But free mainframes are a rare breed, and buying or leasing time on a System/390 remains a luxury for many software companies, IBM, page 121

## NetWare 4.1 ships

By Laura DiDio

Forget detente.

The formal launch of NetWare 4.1 this week will leave Novell, Inc. and Microsoft Corp. poised for all-out trench warfare as Novell tries to beat back the challenge from Windows NT Server 3.5.

At stake are the hearts, minds and purchase orders of an installed base of 3 million NetWare 3.x users who now have two robust and technically elegant network operating systems to choose from as they plot their upgrade path.

For many users—even the most satisfied NetWare stalwarts—choosing between NetWare 4.1 and

Which of the following are you more likely to choose as the basis for your long-term corporate networking strategy?

NOVELL'S NETWARE 4.1 OR LATER	80%
MICROSOFT'S WINDOWS NT SERVER	20%
BANYAN'S ENTERPRISE NETWORK SERVICES	1%
OTHER	2%

Base: 100 Microsoft and Novell users (multiple responses allowed)

Source: Computerworld survey

NT Server 3.5 will be tough.

Ed Wilk, network manager at WHDH-TV, a longtime NetWare shop in Boston, summed up the dilemma confronting users in the network operating systems wars. Like many of his peers, he said he loves the new features and pricing structure of NetWare 4.1.

Still, "I'd be a fool to ignore NT Server 3.5 because Microsoft is so pervasive in the industry," Wilk said. "We've tested NT Server and have found it to be technically very good. [But] because we run customized DOS-based applications and not Windows, we'll most likely stick with NetWare."

NetWare, page 15

## Intel policy incites user threats

By Jaikumar Vijayan

User anger continued to mount last week as Intel Corp. steadfastly stuck to its heavily criticized policy of replacing buggy Pentium chips on a case-by-case basis.

By last week, the Internet, which has become a de facto barometer on the issue, was abuzz with talk of users returning flawed systems. Also raised was the possibility that a few users would file class-action lawsuits if Intel does not redress the situation—and quickly.

Meanwhile, Intel last week said it would delay announcing its much-publicized P24T Pentium OverDrive processor due to a chip flaw (see story, page 8).

In addition to the general outrage over Intel's Intel, page 121

## Users await Mail 3.2 server fix

By Suruchi Mohan

With ship dates for Microsoft Corp.'s Exchange server officially slipping to midsummer 1995, some users and analysts are growing impatient with the company's inability to deliver on its promises.

Some analysts last week said they seriously doubt the messag-

ing server software will be ready by mid-1995. In fact, most said they don't think it will be ready for a late 1995 delivery date, either. Users, meanwhile, are beginning to question how much longer they will have to wait for Exchange as the solution to their woes with Microsoft Mail 3.2.

Mail 3.2, page 121

## Data encryption Security upgrade rattles banking industry

By Gary H. Anthes

Fearing that time is running out on the security of a widely used data encryption method, financial institutions are looking for a replacement. But they face a host of technical, political and economic roadblocks.

The industry is being pushed on one side by users and vendors urging the upgrade of its cryptographic systems. Leaning in on the other side is the federal government, which hopes to influence the future of cryptography for defense and law enforcement reasons.

U.S. banks and brokerage houses now use



the federal government's Data Encryption Standard algorithm to protect the integrity and confidentiality of fund transfers totaling some \$2.3 trillion a day worldwide. But cryptography experts say that sooner or later, criminals armed with very powerful computers will be able to unscramble DES-encrypted data.

Some banks feel the answer is to migrate to "triple-DES," which applies the same algorithm three times and doubles the encryption-key length, making encrypted data vastly more difficult to decipher.

Security, page 28

Newspaper

#BXBJFT\*\*\*\*\* 5-DIGIT 48103  
#UIU7ZE300M099039# 0010112001  
UNIVERSITY MICROFILMS INT 0016  
UNIVERSITY MICROFILMS INT 0011 6 XC -  
SERIAL PUBLICATIONS  
300 N ZEEB RD  
ANN ARBOR MI 48103-1553

## WINDOWS 95

### Pain brings gain

*The transition to Windows 95 won't be easy, but it promises to be worthwhile, particularly for IS shops. A review of a Windows 95 beta version shows that the banishment of DOS is only the first in a string of benefits that IS staffs will see in Microsoft's replacement for Windows 3.1. See page 39*



#### NEWS

■ Sneak peeks at a beta version of Microsoft's **SQL Server 95** database show that work remains to put the product on par with more mature Oracle and Sybase databases. *Page 4*

■ Internet address translation products may well ease the current shortage of addresses. *Page 6*

■ Sun Microsystems is ready and able — but not willing — to ship Microsoft's Windows NT on its 64-bit UltraSPARC systems. *Page 7*

■ Intel's P6 will not be rushed to market ahead of schedule despite the challenge of RISC server makers intent on dominating the server side of client/serversystems. *Page 10*

■ D&B Software plans to adjust costs for client/server migration services. *Page 12*

■ Users of Novell's NetWare 4.1 say it does what it's supposed to and without migration hassles. *Page 14*

■ By adding SNMP support to its CA-Unicenter systems management software, Computer Associates tightens integration with network management products. *Page 16*

#### DESKTOP COMPUTING

■ With three months of experience, users give Apple's **System 7.5** mixed reviews, applauding ease-of-use advancements but knocking its graphics and communications features. *Page 41*

#### WORKGROUP COMPUTING

■ Sun Microsystems' dominance of the SPARC-compatible marketplace may cost it the loyalty of some of its SPARC clone makers. *Page 47*

#### ENTERPRISE NETWORKING

■ Early users of Microsoft's Systems Management Server, formerly called Hermes, say they are impressed. *Page 57*

#### LARGE SYSTEMS

■ Following the high-profile failures of two massively parallel processing rivals this year, the survivors are taking different paths into commercial markets. *Page 69*

#### APPLICATION DEVELOPMENT

■ Symantec upgrades Enterprise Developer

with performance boosts and additional tools. *Page 77*

#### MANAGEMENT

■ Tech-ignorant real estate agents roasting on an open fire is one angry man's idea of holiday cheer. *Page 91*

#### IN DEPTH

■ Is the Macintosh dead for business? A Macintosh proponent says the PowerPC chip and multimedia features make the Macintosh a powerful corporate tool. Not so, says one PC backer, who claims it is expensive and lacks applications. *Page 96*

#### CAREERS

■ IS's role in managing electronic data interchange partnerships may be limited, but three positions offer opportunity to gain experience. *Page 100*

#### MARKETPLACE

■ Monitoring users' personal information managers has never been a high priority, but standardization is becoming more widespread. *Page 109*

#### COMMENTARY

■ Charles Babcock applauds Apple for finally deciding not to go it alone. *Page 8*

■ Bill Laberis forwards an IS wish list to the big guy from the North Pole. *Page 36*

■ Ted Lewis sees an IS field of dreams in Russia. *Page 37*

■ Max Hopper says client/server technology should let you adapt the technology to the way people work, not force people to adapt to the technology. *Page 37*

■ Rich Finkelstein says relational database management systems are the wrong road to on-line analytical processing. *Page 69*

Calendar.....Page 93

Company Index .....Page 138

Editorial/Letters to the editor .....Page 36

Dec. 9 Stock Ticker.....Page 119

How to contact Computerworld ...Page 122

#### Executive Briefing

**Novell's NetWare 4.1 is finally shipping** — just in time to get into a full-blown marketing battle with Microsoft's NT Server. Both companies are taking the gloves off, and the fight promises to get ugly. NetWare 4.1 delivers seven network services — distributed directory services, messaging, routing, network management, file and print services and security — fully integrated into the core network operating system. And its price is lower than that of previous 4.x versions. But Microsoft counters that its solution is still cheaper and provides everything Novell's does in addition to a general-purpose server and applications. *Page 1* Firing Line interviews reveal that early users are pleased with NetWare 4.1. *Page 14*. Analysts say the new NetWare release may be slow to take off in terms of sales. *Page 57*

**The delivery date for Microsoft's Exchange server is slipping** — it's now set for midsummer 1995 — and some users and analysts are getting antsy, questioning the company's ability to deliver even on that goal. Some users say they may not wait for the mail system. *Page 1*

**If you think 1994 was a disappointing year** for wireless developments, you may really hate 1995. The Cellular Digital Packet Data (CDPD) network was not implemented during the past year because vendors stumbled over their inexperience and need to integrate services. Paying customers are finally starting to show up for CDPD, but implementations will take at least a year. *Page 4*

**There isn't a whole lot of self-congratulation going on.** While a small amount of application development projects succeed, most either fall through, come in late or come in over budget, according to a study by the Standish Group. On the bright side, IS executives say the failure rate is lower than it was five to 10 years ago. *Page 20*

**IS must help users imagine what's possible** with new technologies. NationsBank, Domecq Importers and BSG Corp. each found a way to bridge the communications gap that often plagues IS and users in a systems development project. *Page 84*

**On site this week:** Some leading-edge users push the limits of Powersoft's PowerBuilder by using it with tools that create a middle tier to manage transactions. *Page 77*

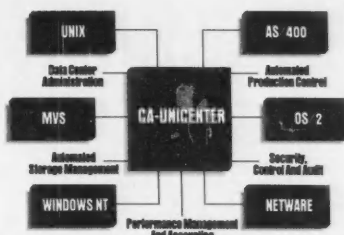
### The 5th Wave by Rich Tennant







**1. Standardize On A Common GUI Interface That Makes It Easier To Use, Reduce Training Costs And Boost Productivity.**



**4. Demand An Open Solution That Supports All Key Industry Standards And Protocols.**

**2. Protect All Your Data With Bulletproof Security Software That Supports Every Platform And Operating System Across Your Entire Enterprise.**



**3. Choose A Client/Server Application That's Interoperable, Scalable And Portable.**

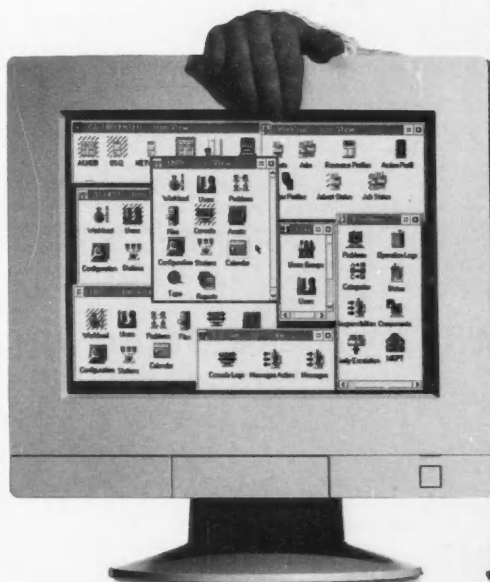


**5. Partner With The World's Leading Software Company.**

**6. Leverage Your Systems Management Experience, Expertise And Personnel.**



**7. Replace Disparate Point Products With A Single, Integrated, Comprehensive Solution.**



# Presenting The 7 Commandments Of Systems Management Software.



When choosing your systems management software, you shouldn't have to make a leap of faith. And with new CA-Unicenter<sup>®</sup>, you don't have to. Because CA-Unicenter is the single, integrated systems management solution that solves all of the challenges of managing client/

server computing across heterogeneous platforms.

So call today for more information about the systems management software you can believe in: CA-Unicenter.

**Call 1-800-225-5224, Dept. 10102  
For More Information And  
To Register For The CA-Unicenter  
Software Giveaway.**

## CA-Unicenter<sup>®</sup>

**Integrated Client/Server Systems Management Software**

**COMPUTER  
ASSOCIATES**  
Software superior by design.

© Computer Associates International, Inc., Ithaca, NY 14850-5000. Offer good in U.S. and Canada only. All other product names referenced herein are trademarks of their respective companies. Requirements for Software Giveaway available through toll-free number.

# Wireless falls short; future looks iffy

By Michael Fitzgerald  
WASHINGTON

Users with wireless on their wish lists will get only coal this Christmas and very possibly next Christmas as well.

The anticipated Year of Wireless never came to be partly because the expected Cellular Digital Packet Data (CDPD) network was not implemented and vendors stumbled over their inexperience and need to integrate product services.

Next year also looks bleak, according to analysts, who said a nationwide CDPD network will not be up until mid-year. As a result, the market simply will not have enough time to run up the learning curve.

## User needs

Users have indicated that they would very much like to have a low-cost, easy-to-develop-for network available and have expressed frustration at the lack of good wireless services. This latest news could slow some users' plans.

For instance, Visa International, Inc. in Redwood City, Calif., said last week it will begin testing Bell Atlantic Mobile Systems' regional CDPD network in the

first quarter of next year for a wireless credit-card verification application.

"We're excited about wireless and think it gives us the potential for opening up new markets" such as for taxi drivers or delivery vehicles, said Dennis Moser, a senior vice president at Visa. But Moser also said he would prefer to roll out his application across a nationwide network rather than region by region.

Events at last week's tepid Wireless Datacomm show provided a suitable backdrop for this grim forecast.

For example, Bell Atlantic Mobile announced that the Groton, Conn., police department had become its first paying customer for CDPD and that Bell Atlantic had achieved interoperability with Ameritech Corp.'s CDPD network in Chicago. Bell Atlantic Mobile also said it had created Greenhouse, a program to encourage the growth of wireless data applications.

Still, "I wouldn't say we'll be built out by the end of 1995," said Michael Franklin, director of product management at Bell Atlantic Mobile.

Franklin also said the company does not intend to pursue a "build it and they will come" strategy for its CDPD network. Instead, it will opt to let customer demand push its network goals, and it will reassess its investment at certain points. But that strategy, implemented by Metricom, Inc. in Los Gatos, Calif., for its wireless network Ricochet, has not worked well.

Other vendors contacted reaffirmed commitments to build out the CDPD network, but analysts said the customer issue could greatly slow CDPD deployment.

"If customers don't come, [vendors] won't deploy the network," which could lead to a chicken-and-egg scenario for the CDPD market, said Roberta Wiggins, an analyst at The Yankee Group in Boston. She said this could push users to opt for circuit-switched cellular technology rather than CDPD.

Most analysts agree that users should not expect to roll out broad, horizontal wireless data applications based on CDPD next year, although the technology

may work well for vertical applications.

Other events at Wireless Datacomm included the following:

- Metricom publicly discussed its problems with its wireless network, Ricochet. Newly named Executive Vice President Don Wood said the company has delayed deploying its network because of a move to 100-KHz performance. He also outlined a more aggressive rollout plan for 1996, rather than the build-to-customer-demand strategy Metricom said it would follow earlier this year. That plan has essentially failed.

- Wood said Metricom will finish deploying in 1995 its network, now in beta testing in Silicon Valley, Calif., and Bellevue and Redmond, Wash. It will build out to as many as four other cities — Washington, Boston, Chicago and Houston — regardless of user interest, Wood said.

- Aironet Wireless Communications, Inc. in Needham, Mass., announced its second-generation wireless access device, said to advance wireless LANs. Aironet's ArLAN Models 630 and 640 use spread-spectrum technology to achieve data speeds of 2M bit/sec. Pricing starts at \$1,795 for a 900-MHz radio that can support up to 2,048 users.



## SQL Server 95 gets mixed reviews

Beta trails Unix databases technologically but competes in price

By Kim S. Nash  
NEW YORK

Sneak peeks at a beta version of Microsoft Corp.'s SQL Server 95 database at DB/Expo '94 here last week revealed that it is not yet on par with more mature Oracle Corp. and Sybase, Inc. databases.

Yet while Microsoft works to catch up technologically with its Unix rivals, the company will likely continue to best those competitors on price, according to users and analysts.

"Quality doesn't always win — which is not to say that Oracle or Sybase is the epitome of quality. But Microsoft will certainly push the pricing edge against them very hard," said Richard Finkelstein, an analyst at Performance Computing, Inc. in Chicago.

The first release of SQL Server 95 has a few notable holes. For example, while Sybase offers full replication to and from several relational and nonrelational databases, that capability will be missing in the initial release of SQL Server 95, confirmed Gary Voth, senior product manager for corporate and network systems at Microsoft.

Right now, SQL Server 95 can replicate data only to other Microsoft databases. Users who want to bring any other system into the picture must do so through gateway products supporting Open Database Connectivity interfaces, Voth said. He added that direct replication to databases other than Microsoft's databases is "something we are working on." He de-

clined to estimate when the function might appear.

In fact, Voth and other Microsoft officials have steadfastly refused to say when users can expect general availability of SQL Server 95, other than to say it is due next year. It is in beta testing at 125 sites, Voth said.

On the plus side, SQL Server will come with fancy graphical administration utilities designed to monitor remote databases from one console. By comparison, Oracle 7 cannot do the same, although Oracle

said it plans to offer such an option in the future.

SQL Server 95 also contains a job scheduling feature that lets database administrators queue up several small tasks to be carried out together at a specified time.

## Keeping with Microsoft

Some users are convinced they cannot go wrong by using Microsoft applications on both the desktop and server levels. The New England, a Boston-based finance and insurance firm, plans to upgrade to SQL Server 95 "as soon as it comes out," said Howard Lipsky, assistant vice president of technological support and research. He also liked the tight integration of SQL Server with Microsoft's Windows NT.

The firm recently migrated from an OS/2-to-Windows NT-based version of Microsoft SQL Server in its 82 offices nationwide. "We know what Microsoft says about NT being scalable, and we believe it," Lipsky said.

## New Year's resolutions

Although Microsoft promises several new features for its SQL Server 95 database, officials refuse to set a ship date

- "Publish and subscribe" replication.
- Graphical monitoring utilities.
- Automated backup and restart.
- Declarative referential integrity.
- Backward and forward scrolling cursors.

## Powersoft users reassured about Watcom's life span

By Kim S. Nash  
NEW YORK

Powersoft Corp. users can take comfort that their Watcom database will not fall by the wayside if Sybase, Inc.'s proposed \$900 million buyout of Powersoft is approved.

During a speech here at last week's DB/Expo '94 conference, Bob Epstein, executive vice president at Sybase, described a PC-to-enterprise database strategy that clearly includes Watcom.

After the two companies announced merger plans last month, users had worried that Powersoft's single-user Watcom database would be killed in favor of a low-end version of Sybase's SQL Server.

Apparently not, because at the show, users also got a peek at a version of the Watcom database supporting Transact-SQL, Sybase's brand of structured query language. A production edition is due to ship next year, Watcom sources said. Support for Oracle Corp.'s PL/SQL "is being examined," but Watcom has no formal plans yet to support the rival language, they said.

Other announcements at DB/Expo include the following:

- Object-relational database maker Illustra Information Technologies, Inc. announced a pact with Intel Corp. to jointly build a high-performance version of Illustra's product for Microsoft Corp.'s Windows NT on Pentium boxes. Due to ship in August 1995, the database would target users creating multimedia and on-line applications.

- For users struggling to move data housed in nonrelational mainframe databases, Micro Data Base Systems, Inc. in Chicago unveiled Titanium, a repository designed to store hierarchical, relational, object and other types of data simultaneously.

- IBM announced a bundle of its SP2 massively parallel processing (MPP) hardware with an MPP version of DB2 aimed at data warehousing users. The so-called Powerquery package is slated to ship by mid-1995, after parallel DB2 finishes beta testing. Prices were not available, IBM said.

**"WITH ORACLE CDE WE BUILT A WORLDWIDE SYSTEM**

**IN FOUR MONTHS."**

Chip Bennett  
V.P. Information Systems  
The First National Bank of Chicago



Chip Bennett and  
his Oracle CDE  
design team.  
Clockwise from top:

Chip Bennett,  
Peter Munoz,  
Shelley Chan,  
Ben Krug,  
Kathy Clarke,  
Herbert Poveda,  
and  
Nina Kant

**WHY THIS MAJOR BANK CHOSE ORACLE CDE  
FOR WORLDWIDE APPLICATIONS DEVELOPMENT.**

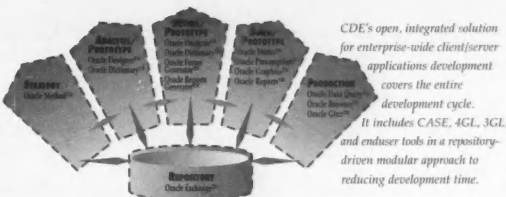
"Oracle's CDE enabled The First National Bank of Chicago to introduce new products and services to users quickly on a global basis. For us, three CDE

features stood out in this

regard: •The way CDE facilitates developer/end-user cooperation •The ease with which we can simultaneously access Oracle7 and DB2 databases via an easy-to-use front end •The simplicity with which it allows us to adapt systems to changing needs." comments Mr. Bennett. For the CDE Technology and Executive Brochures that provide a complete overview of CDE products, call 1-800-633-1071 Ext. 8176.



Oracle sells more tools than any independent software company.\*



**ORACLE**



# Users seek mailboxes

Address translators offer solution for locked-out Internet surfers

By Steve Moore

Frustrated by a worsening shortage of Internet addresses and aware that it will be several years before a next-generation version of the Internet Protocol begins to alleviate that shortage, network managers are hunting for interim solutions.

Unable to get large Class A or Class B addresses, some users have sought to aggregate smaller, Class C addresses. Others have performed IP address translations through Unix-based proxy servers that require software on each client machine. But these solutions have proved complex, time-consuming and expensive to implement.

Now, however, some relief is in sight in the form of address translators that some analysts say could significantly delay the adoption of the next-generation IP, even though it will use 16-byte addresses rather than the 4-byte addresses that limit the scope of the current

version of IP.

At last week's Fall Internet World '94 conference in Washington, Network Translation, Inc. introduced the first commercial address translation product, the Private Internet Exchange (PIX). The PIX device sits between a user's private network and the Internet, translating large numbers of purely internal addresses to smaller numbers of shared, registered IP addresses.

"PIX has saved us from converting all our illegal, [unregistered] IP addressing to legal addressing," said Alan Helbush, staff systems administrator at KLA Instruments Corp. in San Jose, Calif. "A lot of addresses are burned into ROM, so it would take a huge time investment to change our addressing."

"This type of product will definitely find a market," said Dave Passmore, a principal consultant at Decisis, Inc. in Herndon, Va. "The alternative is to roll your own code on a Unix box or try to adapt

an Internet firewall product that was not really designed for address translation."

Before KLA Instruments became a PIX beta site, Helbush said, "we had a proxy server that was good for Unix users. But it left out our PC and Macintosh users so they couldn't share in the wealth of the Internet."

With PIX, "a PC or Mac can use Mosaic and be just as much a citizen of the Internet as Unix users," said Network Translation President John Mayes.

## Why bother upgrading?

The emergence of address translation products such as PIX may leave many users with little incentive to adopt the next-generation IP once it becomes available. "There is really no assurance that [the next-generation IP] will ever be implemented broadly because it represents a major functional transition for TCP/IP software," said Tom Nolle, president of CIMI Corp. in Voorhees, N.J.

# SCO patches five Unix security holes

By Jean S. Bozman and Gary H. Anthes

The Santa Cruz Operation (SCO) last week alerted its users about several security holes in the SCO Unix operating system and urged them to apply the fixes it is providing.

In an alert sent over the Internet, the Computer Emergency Response Team (CERT) at Carnegie Mellon University in Pittsburgh forwarded a notice from SCO. The notice informed users about binary "patches" available to fix flaws in five Unix programs: `at(C)`, `login(M)`, `prwarn(C)`, `sadc(ADM)` and `pt_chmod`.

Any user with an account on the system could obtain

unauthorized root access to the system by exploiting any of the programs cited, the warning said. "SCO urges you to act on this information as soon as possible," the CERT said.

## Better watch out

Security flaws exist in the following SCO products:

- ◆ Unix System V/386 Release 3.2 Versions 4.0, 4.1 and 4.2
- ◆ Open Desktop Lite Release 3.0
- ◆ Open Desktop Release 3.0 and 2.0
- ◆ Open Server Network System Release 3.0
- ◆ Open Server Enterprise System Release 3.0

In keeping with standard security policy, neither the CERT nor SCO would provide details about how the security vulnerabilities could be exploited.

Bob Kostosky, director of store technology at \$4 billion Rite-Aid Corp., said he was unaware of any security problems. "I don't know anything about that at all," said Kostosky, who managed a national rollout of 2,700 SCO Unix store systems this year.

John Payne, director of point-of-sale technology at \$2 billion Pizza Hut, Inc. in Wichita, Kan., was notified about a potential security problem by a SCO account manager. But Payne said he was not concerned.

Pizza Hut uses SCO Unix on PCs at more than 4,000 stores worldwide, but they communicate through a private network via a dial-up modem. "We don't use the Internet at all for any kind of transmission like that or we'd be more concerned," he explained.

Recently, however, Pizza Hut began a test to see if customers could order pizzas via the Internet, a project that will be expanded next year. "We have some general concerns about the Internet because of security in general," Payne said. "Because our systems sit off to the side and are not integrally tied into it, we've taken what we think are proper and prudent security precautions."

The SCO software patches are available by the following means:

- ◆ Anonymous file transfer protocol (FTP) at <ftp://ftp.sco.com> (login name: `ftp`; password: your electronic-mail address).
- ◆ FTP via the World-Wide Web at <ftp://www.sco.com>.
- ◆ Interactive download from the SCO Online Support bulletin board.

Users can contact SCO via the Internet at [support@sco.com](mailto:support@sco.com) or by calling (800) 347-4381.

# Security the star at Internet show

By Ellis Booker

WASHINGTON

■ What with the crowds, the lack of aisle markers and general disorganization, it was a challenge even finding the 115 exhibits at last week's Internet World in Washington.

Then again, it all seemed so familiar. A crowded, chaotic, exciting place—just like the Internet today.

Attendance at the three-day Fall Internet World '94 exploded to 11,000, up from 4,000 attendees and 40 exhibitors last year, according to show organizer Mecklermedia Corp. in Westport, Conn.

"It's indicative of the broadening acceptance and use of the Internet," said Joel Maloff, an Internet consultant in Dexter, Mich. Maloff's revenue study of Internet access providers underscored this growth. "Last March, the annualized revenue total was just under \$50 million, and by March of this year it was \$120 million," he said.

For Tom Smith, manager of data communications at Reynolds Metals Co. in Richmond, Va., the Internet is already a critical part of his company's research and engineering activities.

"It's used by our researchers and engineers to access high-speed computing facilities. ... and we're evaluating using [the Internet] for electronic data interchange," he said.

But Smith repeated the oft-heard concern that without secure software, the Internet's commercial viability will continue to be questionable.

## Securing the hatches

In an apparent answer, the major product news from Internet World centered on a number of software vendors hawking browsers to implement the so-called Secure HyperText Transmission Protocol (HTTP) standard early next year.

For example, Terisa Systems, Inc. in Menlo Park, Calif., announced several licensees for its Secure HTTP tool kits priced at \$3,000. Secure HTTP provides transaction security over open networks through the public key cryptography technology developed by RSA Data Security, Inc. in Redwood City, Calif.

Michael Curry, vice president of new media at Book-of-the-Month Club, Inc., said he thinks Internet client software capable of supporting secure credit-card transactions is still six months to a year away.

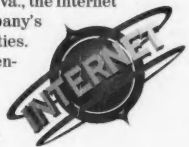
But he said the information systems group at parent company Time Warner, Inc. is already at work on business systems for Book-of-the-Month Club's 10 clubs and that the book club would have "a significant presence on the Web in '95." Time Warner's corporate World-Wide Web site, dubbed Pathfinder, has been up for about a month.

## Making transactions safer

Other content providers further along than Book-of-the-Month Club are similarly preparing secure transaction software to enable the selling of services across the Internet.

Jeff Spier, director of business development at the Internet Shopping Division of Home Shopping Network in Menlo Park, Calif., said his company is working with browser vendor Netscape Communications Corp. to support credit-card payments over the Internet. That feature, he said, will be available within two to three months.

Overall, the rapid growth and accelerating commercialization of the Internet is pressuring a wider spectrum of companies. Businesses "have to develop a corporate Web presence and understand that the under-40 consumers will expect to find one," said Mark Heller, president of The Intermark Group Ltd. in Potomac, Md. He stressed that an IS organization unwilling to be a vanguard in this area is in danger of becoming "the tail wagged by the dog."



## Correction

Due to a printer error, a pie chart segment with the Page 1 story "Industry pressures PC leaders," was left blank last week. The segment should have read, "Not at all concerned—15%."

# Sun UltraSPARC chip can run NT — but won't

By Jean S. Bozman  
SAN JOSE, CALIF.

Sun Microsystems, Inc. is ready and able — but not quite willing — to ship Microsoft Corp.'s Windows NT on its 64-bit UltraSPARC systems next year. The UltraSPARC chip, due to ship in the third quarter, will support NT if Sun's chip customers decide to use it.

Sun executives last week said users are far more interested in getting performance

from UltraSPARC, a true 64-bit chip that is two to three times faster than the current crop of 32-bit SuperSPARC chips.

"If it does what they say it's going to do, it would put them ahead of everybody except Alpha,"

said Linley Gwennap, editor of "Microprocessor Report" in Sebastopol, Calif.

With all that power, Sun is pushing its high-end performance improvements.

"We've got the capability to kick-start the NT port," said Sun Chief Executive Officer Scott McNealy at an UltraSPARC briefing for analysts here last week. "If it ever becomes a reasonable opportunity, we'd be happy to crank it up. But we certainly don't see that now."

## Striking out on its own

By declining to market NT, Sun is refusing to deal with the coming convergence of PCs and workstations, Gwennap said. "Today, they're doing well, but looking out into the future, they're not going where everybody else is going."

Hewlett-Packard Co. and IBM, for example, have delivered Unix-based RISC PCs that could be made to run other operating systems.

However, Sun's SPARC Technology Business unit is doing something about NT. The subsidiary recently hired more than 50 Intergraph Corp. engineers who had been working on an NT port earlier this year. Sun's RISC rivals, IBM and HP, have both done NT ports for their RISC chips even though they have not yet decided to market them.

Meanwhile, Digital Equipment Corp.'s Alpha, Silicon Graphics, Inc.'s MIPS chips and Motorola, Inc.'s PowerPC chips all run NT on shipping systems.

Eric Schmidt, Sun's chief technology officer, said the UltraSPARC chip will be able to run NT "extremely well." But he added that Sun does not plan to ship NT-compatible machines itself. Yet Sun could market an NT version "in a very short time" if it decided to produce one, he noted.

NT is so important to some Sun clone makers that they are planning to move to PowerPC to get NT. "Sun's SPARC peo-

ple are agnostics when it comes to operating systems," said David M. Smith, an analyst at International Data Corp. in Framingham, Mass. "Their goal in life is to sell SPARC. But I think the only way Sun Microsystems would give in and run NT itself would be as a last-ditch effort."

Getting UltraSPARC into systems —

with or without the NT port — is vitally important to vendors that base their systems on SPARC chips.

SuperSPARC's lagging performance caused many Sun sites to search for more power from other RISC vendors or upgrade Sun servers with HyperSPARC chip sets from Ross Technologies, Inc.

The *Houston Chronicle* did that about four months ago, upgrading four aging Sun 670 servers with HyperSPARC chips, said Jerry McEachern, technology resources manager.

Clone makers are bailing out on SPARC — at least as their prime focus. See page 47.

## Pedal to the metal

Sun's 64-bit UltraSPARC chip will put the company back in a speed race with IBM and HP, analysts said. The current SuperSPARC is roughly as fast as Intel Corp.'s Pentium chip.

August 13, 1990—  
New York power outage  
causes disruptions  
15 Systems Effectuated

October 17, 1989—  
San Francisco rocked by  
major Earthquake  
25 Systems Effectuated

**DON'T LOSE  
CRITICAL DATA...  
PREVENT A  
REAL DISASTER**

August 24, 1992—  
Hurricane Andrew  
damages southeast  
48 Systems Effectuated

April 13, 1992—  
Chicago River Flood  
Downtown  
33 Systems Effectuated

FDR with FASTCPK, FDRREORG, FDREPORT and ABR are the proven resources most MVS users rely on. From the fury of Hurricane Andrew, surging Midwest floodwaters, World Trade Center bombing to the California earthquakes, Innovation product users were able to attain "business as usual" conditions faster and more completely than those using other products.

Two decades of experience and client confidence make Innovation systems the preferred disaster recovery system of DASD managers.

FDR/ABR provides the fastest backup and restore of entire volumes and individual data sets. ABR space management (ARCHIVING) can be used to move data to a less costly storage medium. Full support for RAMAC, ICEBERG, EMC DASD.

## USER EXPERIENCES:

- ▶ "Incremental backup required 70% less elapsed time than DFHSM."
  - ▶ "We merged data centers. The number of DASD volumes tripled. We switched to ABR and were able to complete the backups in the same amount of time."
  - ▶ "The unthinkable occurred one day before our full volume backups. Within hours we were able to recover hundreds of DASD volumes at our disaster site from ABR incremental backups. ABR recovered the volumes as if we had done full backups the night before."
- Find out why 5,000+ users rely on Innovation's FDR products to provide the best and least costly solution for their storage management needs.



Call for a FREE  
No-Obligation 90-Day Trial

For the Safest DASD Storage—It's critical you rely on...

Available for all  
MVS Operating Systems

**INNOVATION**  
DATA PROCESSING

CORPORATE HEADQUARTERS: 275 Paterson Avenue, Little Falls, New Jersey 07424 • (201) 890-7300

EUROPEAN OFFICES: FRANCE 01-47-69-15-15 GERMANY 089-439-2053 NETHERLANDS 036-534-1660 UNITED KINGDOM 0181-905-1266 NORWEGE COUNTRIES +31-36-534-1660

## Apple makeover: A new look

**A**pple Computer is struggling to reconfigure itself. As we watch from the sidelines, it's tempting to both cheer the effort onward and gnash our teeth at the pace of progress.

Nevertheless, it's clear Apple is trying to mend its ways. Instead of concentrating on high profit margins, it wants more market share. Instead of resting on its laurels, it's trying to build advanced features into the next version of the Macintosh operating system. Best of all, it belatedly understands the value of a more open platform, which could eventually lead to the manufacture of clones.

Fortunately, that understanding is tied to agreements with IBM that will lead both companies toward producing PCs based on a common underlying PowerPC technology. Much remains to be done and the effort could still splinter apart, but Apple appears to have at least a glimmer of recognition that going it alone with 10% of the market will no longer cut it.

With the overwhelming dominance of Windows, any effort by Apple at this point might appear to be too late. Nevertheless, even the indifferent have reason to wish Apple success. As we watch Intel reassure millions of customers that its Pentium mistakes don't matter, it reminds us of the risk inherent in being dependent on any single supplier or architecture. Best to keep alternatives available. If nothing else, let alternative suppliers set a higher standard of behavior and technology for the dominant manufacturer to live up to.

Apple has learned the lessons of the PC marketplace the hard way. Now it remains to be seen whether there is enough time left for it to do something about them before Windows overtakes all the advantages of the Macintosh.

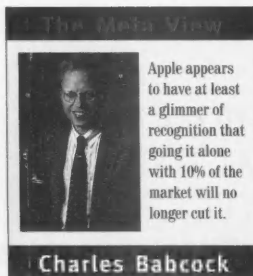
Apple's biggest challenge is decoupling the Macintosh operating system from its dependence on the underlying hardware. The close interdependence of the hardware and software has given us many Macintosh advantages—ease of installation, network hook up and plug-and-play accessories—but unravelling this tight integration was beyond the ken of clone makers. Even if Apple licensed System 7 as it is today, clone makers would need the assistance of codified and standardized specifications for all the dependencies and would struggle to keep up.

Once Macintoshes are built to the PowerPC Reference Platform, new possibilities will open up. The Copland version of the Macintosh operating system will be microkernel-based and therefore more portable. Apple has greater ambitions for Copland now than it did a short while ago. If pre-emptive multitasking makes it into the system, then Apple can layer the Taligent Common Point application development environment on top of it. Taligent's object-building capabilities could yield a long-term competitive advantage. With thousands of pre-coded object classes available, Common Point may prompt corporate software developers to take a second look at the Macintosh.

Apple also wants to upgrade the networking support, making it as easy to hook a Macintosh up to common network protocols like TCP/IP and IPX as AppleTalk. And the flashy new user interface would be scalable to the varied skill levels of several users on the same machine.

Likewise, the prospect of IBM and Apple producing PCs that can run more than one operating system may yield additional advantages. With backward compatibility with two (or more) application sets, buyers would have good reason to reconsider the Macintosh.

It's all an iffy scenario that hinges on the rapid upgrade of the PowerPC chip and agreements between its supporters to bring a common PowerPC platform into volume production. It's in our own interest to cheer such an effort onward.



Babcock is *Computerworld's* technical editor. His MCI Mail address is 575-2737.

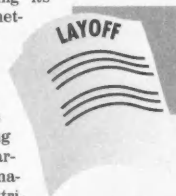
## News Shorts

### GTE picks IntelliCorp to help design new development structure

The telephone operations division of GTE Corp. struck a deal potentially worth \$10 million last week with IntelliCorp, Inc. to help design its future software development platform. The partners will blend some of GTE's own object development tools, including methodologies, with IntelliCorp's Object Management Workbench (OMW). The deal includes a \$5.8 million software license for OMW. The long-term goal is to build a development environment that will provide GTE with up to 80% software reusability and support as many as 2,500 programmers, said Blayne Mering, assistant vice president of technology specifications at the Irving, Texas, company.

### IBM issues final layoffs of the year

IBM wrapped up its 1994 layoffs last week, issuing pink slips to 1,150 employees in five business units, including its mainframe and networking systems divisions and the U.S. marketing and sales organization. As many as 12,000 jobs are being cut in the fourth quarter through a combination of layoffs and attrition, bringing IBM's workforce down to about 222,000. And more cuts are ahead. While IBM would not disclose an overall workforce target for 1995, it announced that 850 jobs will be cut in the first half of the year at IBM U.S., its outsourcing operation and its interactive services unit.



### Bug will delay P24T chip

Talk about tough times for Intel. Last week, the company announced it will not ship the highly publicized P24T Pentium Overdrive processor on schedule. According to Intel, one reason for the delay is an effort to fix a flaw in the processor that prevents boot-up in systems invoking the built-in self-test function. Intel described the flaw as a "very minor hitch." The Overdrive processor is aimed at users who want to upgrade from i486SX- and DX-based systems to Pentium-class performance.

### Xerox taps Sequent for consulting

In a major endorsement of a hardware vendor as a services provider, Xerox Corp. has hired Sequent Computer Systems, Inc. to help it map out an enterprise architecture plan. The six-month engagement is part of Xerox's Information Management 2000 initiative, which is aimed at aligning information technology with business goals.

### Mtel buys out Destineer stock

Mobile Telecommunication Technologies Corp. (Mtel) said it is buying out minority owners of its Destineer Corp. subsidiary, which is building a two-way paging network based on narrow-band Personal Communications Services technology. The investors, among them Microsoft Chairman Bill Gates and Microsoft co-founder Paul Allen, will exchange their 20% stake in Destineer for 7.5% of Jackson, Miss.-based Mtel.

### Cheyenne eyes the enterprise

At a New York symposium last week, Cheyenne Software, Inc. divulged plans to add more enterprise-like features to its storage management software. The technology, called Mercu-

ry, is slated to include heterogeneous clients to manage heterogeneous servers, automatic recovery of failed jobs, unlimited concurrent backup, support for terabyte tape libraries and applications based on Simple Network Management Protocol.

### Infrared standard picks up speed

Microsoft is working with Hewlett-Packard Co. to build infrared communications into Windows 95, its next version of Windows. Infrared can handle both serial and parallel functions, eliminating the need for two ports on portable devices. Hewlett-Packard will write code to put the Infrared Data Association's standard into Windows 95. The drivers will be available from notebook and peripheral makers upon the release of Windows 95, though Microsoft will not build it into the operating system until 60 to 90 days after it ships.



### CA to absorb OpenIngres fees

Computer Associates International, Inc. will begin shipping CA-OpenRoad for Microsoft's Windows 3.1 and Windows NT before the holidays, while Unix versions of the fourth-generation object-oriented development tool have just entered beta testing and will ship by the end of March. CA also plans to absorb all porting and certification fees for CA-OpenIngres as the database is reconfigured for new hardware platforms and operating systems. CA will also share license fees with its CA-OpenIngres resellers.

**SHORT TAKES** Lehman Brothers, Inc. has laid off 200 of its 2,300 trading systems and technology staffers in an effort to reduce costs. ... Armed guards now patrol Cyrix Corp.'s headquarters in Richardson, Texas, where some 2,800 486DX2 microprocessors worth an estimated \$359,000 were stolen Dec. 4. ... X/Open Co. will merge with the SQL Access Group, which quietly became one of X/Open's working groups this month. In the process, X/Open paid a token fee of 1 pound sterling for the right to use the SQL Access Group brand name. ... Next Computer, Inc. shipped Next-Step 3.3 for Intel Corp. and Motorola, Inc. platforms and sent a software developer's kit version of the object-oriented operating system into beta testing for HP's PA-RISC systems last week. ... The ATM Forum last week passed a motion from the Desktop ATM25 Alliance to consider an additional midrange physical specification for Asynchronous Transfer Mode (ATM). The vote opens up the possibility once again for 25M bit/sec. ATM to become a standard. In July 1993, the forum voted to consider only one low-speed ATM proposal—51M bit/sec.



# Most service providers offer a road map.

## But how many are willing to dig in and help pave the road?

To help you reach your business goals, Unisys Services do more than point the way. We provide concrete means for getting you there. In fact, we even join you in the trenches.

Unisys *Systems Integration* ties together all the elements of your information environment, no matter whose systems make up your environment.

Unisys *Information Planning* services work closely with you to develop a pragmatic, information technology plan—a plan serving

### **cus-tom-er-ize** \kūs'-tə-mə-rīz' \ w/

**1:** to make a company more responsive to its customers and better able to attract new ones **2:** to customize an organization's information strategy, e.g., to extend systems capabilities to field locations and other points of customer contact and support **3:** what Unisys Corporation does for a growing roster of companies, and government agencies, worldwide **syn** see CUSTOMER SERVICE, COMPETITIVE EDGE, BUSINESS-CRITICAL SOLUTIONS, REVENUE GENERATION

your business goals and not the other way around. Our proven approach teams us with our clients to re-engineer processes and to identify real-world results before designing applications on which those results will depend.

Through our *Education* services, you



gain the practical knowledge essential for bringing out the best in people and technology, ensuring that strong planning yields a strong outcome. And Unisys *Outsourcing* will shoulder responsibility for your operations, freeing you to focus energy and

resources on your core business.

At the heart of Unisys Services is our CUSTOMERIZE philosophy. It helps increase your competitiveness by creating a pro-customer culture fully supported by your information strategy.

Call us at 1-800-874-8647, ext. 186. Ask how the down-to-earth approach of Unisys Services can help you drive your business as far as you want it to go.

# UNISYS

We make it happen.

# Intel's P6 holds to fall 1995 delivery plans

By Michael Fitzgerald

Despite reports to the contrary, Intel Corp. is not accelerating the development process of the P6, its next-generation, high-availability processor, sources close to the company said.

Sources said Intel will continue to fol-

low the schedule it set last year, which calls for producing samples of the 133-MHz part in the first quarter, followed by a midyear announcement and shipments to hardware makers in the fall.

Some OEMs said they expect to have P6 running in servers by Comdex/Fall '95, but not before.

In addition, Intel is developing a high-end version of the chip that will target massively parallel computer makers such as AT&T Global Information Solutions, sources said. The high-end version, along with a 150-MHz chip expected next year, could help massively parallel computers gain momentum in the mar-

ket, according to observers.

Intel declined to comment on unannounced products.

Users said the chip, which includes built-in support for four-way multiprocessing, is key to Intel's ability to maintain a presence in the server market as applications move from large systems to client/server implementations.

"Single-processor servers for large databases can't be managed effectively — you have to have multiple processors," said Abraham Chait, a team lead at Pacific Gas & Electric Co. in San Francisco.

He said Unix boxes dominate the server side of client/server applications because of their performance and suggested that Intel is in danger of losing the server market if it cannot match Unix server makers.

**P6 will contain some 6 million transistors.**

## ADP Autonet™ serves the nation with a network that's 100% high-speed and 100% Motorola!



**"Besides giving us a threefold improvement in efficiency, our all-Motorola network has made us the first in our industry with 100% high-speed capability ..."**

— Lynn Rich  
General Manager  
ADP Autonet

After an extensive hardware search, ADP Autonet selected Motorola Model 3229 dial-up modems for its massive network upgrade. Some 2,500 of the modems are now installed, providing network access in more than 250 U.S. cities.

As the nation's leading independent computer services company, ADP Autonet has realized a 3:1 performance improvement since choosing the Motorola modems. With a top communications speed of 14.4 kbps, the 3229s have made Autonet the quickest network of its kind anywhere.

If your requirements are no less demanding than ADP's, you can profit from their example. Select an all-Motorola solution with products from the Transmission Products Division that range from laptop, to LAN, to digital. For details, contact your distributor or call us today.

**800/766-4883**



**MOTOROLA**

All names, products and services mentioned are the trademarks or registered trademarks of their respective organizations.

### High volume

According to sources, the P6 chip, which will begin at 250 MIPS and bump up to 300 MIPS, will contain several other features:

- **High availability.** This can be achieved through capabilities such as error-correcting code, which falls short of redundancy but brings PC servers to the level of Tandem Computers, Inc.'s high-end servers.
- **Multiprocessing.** This will give PC server makers a standard multiprocessing server architecture that could level the playing field in the server arena. However, it may damage Compaq Computer Corp., which touts its proprietary Tri-Flex architecture as a differentiator.
- **Unique packaging.** Sources said the chip is 1½ to 2 times as large as the current Pentium. It includes the processor and a 256K-byte Level Two cache in one package — a first for Intel. The architecture should help boost performance.

Intel officials did discuss P6's Dynamic Execution feature, which is the major performance differentiator between P6 and Pentium.

John Hyde, a technical marketing manager at Intel, last week said the Dynamic Execution feature combines branch prediction, speculative execution and data-flow analysis to improve chip performance — three instructions per cycle, compared with Pentium's two instructions per cycle. The chip does this by analyzing programs and predicting what instruction will be executed next.

"It's the first time a processor has executed a program rather than instructions," Hyde said. This should let the first-generation P6 run programs twice as fast as today's 66/100-MHz Pentium, he added.

Hyde also said the P6 will consist of multiple units. One unit will act as a fast front end, another as the speculative middle part and the last will be an in-order back end that maintains software compatibility with current applications.



# How can a graphical interface help you master your programming environment?

## The Workbench® Graphical User Interface

It's all a matter of control... And Micro Focus COBOL Workbench® has a new graphical user interface that

gives it to you.

Start with a

programming environment you configure to accommodate the

way you work. Quickly perform tasks through customized pull-downs and context sensitive menus

in native Windows™ or OS/2® environ-

ments. Open a debugging session by

simply dragging your project onto the

debugging icon. Now you're in a visual

programming environment where you

can edit, compile and debug in a single window. Workbench

even uses colorized syntax for quick identification of sections, verbs, data items...

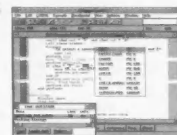
and typing errors. That's

the kind of control that

makes COBOL Workbench

more responsive and you

more productive.



*The Workbench COBOL environment is fully compatible with OS/2 and Windows.*

See for yourself... Contact Micro Focus at 800 MF COBOL Ext. 1201 and ask for your copy of the Micro Focus Interactive CD. On it, you'll find descriptions and interactive demonstrations of Micro Focus Application Development Tools.



*There's a lot more to it.* **MICRO FOCUS®**

Micro Focus and COBOL Workbench are registered trademarks of Micro Focus Ltd. Other trademarks and registered trademarks are property of their respective companies.



# Legent rolls out client/server tool

By Steve Moore

Taking a cue from vendors that already offer modeling and capacity planning tools for mainframes and wide-area networks, Legent Corp. last week rolled out its own client/server application modeling tool.

New from Legent			
PRODUCT	FUNCTION	AVAILABILITY	PRICE
Paramount/XP-Capacity Application Modeler for Distributed Systems	Simulates the performance of client/server applications across multiple platforms	First-quarter '95	\$33,000
Paramount/XP-Response Manager	Analyzes client/server response time trends from increased network traffic	Now	\$15,000

Legent's Paramount/XP-Capacity Application Modeler for Distributed Systems allows users to construct "what if" scenarios to evaluate how proposed changes to hardware or software would affect the performance of client/server applications.

"We're using it to evaluate applications before we buy," said Jim DeVries, a research planning analyst at Southern California Edison Co. in Rosemead, Calif. "We bring an application in for trial on a small test bed, and then we use the modeler to ramp it up to see what the capacity requirements and response times will be when the application is fully loaded."

Southern California Edison is evaluating ap-

plications such as a materials management system and a cashiering system for collecting payments from rate payers.

Legent's Capacity Application Modeler "is not just a mainframe tool or even a ported mainframe tool. It's a tool to analyze the behavior of distributed systems," said Paul Mason, an analyst at International Data Corp. in Framingham, Mass. He noted that while Legent is strongly positioned in the distributed systems arena today, it must continue to sew its products into a seamless whole that encompasses client/server and mainframe environments.

## Worthwhile investment

DeVries said he found the first version of Capacity Application Modeler to be "very valuable," although the initial investment was high. "But the future payoff is growing exponentially as we add new applications, and the complexity becomes unmanageable except by a model," he added. "You can't sit and do it by intuition anymore."

Legent also announced delivery of its Paramount/XP Response Manager, which had been announced last June. Response Manager is a Microsoft Corp. Windows NT-based product that allows users to proactively monitor client/server application response time.

The agent component of Response Manager works with another Legent product, LANSpy, to collect traffic statistics and monitor performance relative to user-defined objectives.

Legent client/server link targets costs. See page 69.

# D&B Software reworks Smartpath, drops price

By Rosemary Cafasso

Hoping to answer user complaints about high costs, Dun & Bradstreet Software plans to soon release a revised and cheaper Smartpath set of client/server migration services and products.

Earlier this year, the company angered some of its mainframe customers when it previewed Smartpath with a hefty fixed price of \$25,000 per application. At the time, users said they expected that at least some migration assistance would be included for free with their ongoing maintenance fees when they opted to move to the company's SmartStream client/server platform.

## Free conversion

Last week, company officials complied, saying they will now offer basic data conversion services for free as part of Smartpath. In addition, the vendor said it will offer packages with different price ranges — from \$20,000 to \$100,000 — that will include different levels of customization. These packages would replace the fixed per-application migration fees.

With the initially proposed Smartpath pricing, users would have paid \$100,000 to migrate to four client/server applications, such as Financial Stream's ac-

counts payable, accounts receivable, general ledger and fixed assets. With the new pricing, \$100,000 will provide conversion services for up to nine SmartStream applications and a customized conversion project with three weeks of on-site services, company officials said.



## Toeing the line

"That is definitely a step in the right direction," George Cacchiani, a senior analyst at Pepsico, Inc. in Purchase, N.Y., said of D&B.

Software's revised plans for Smartpath. "There's a baseline of support they should offer if they want people to move to client/server."

D&B Software had targeted an end-of-year shipment date for Smartpath but last week said it will miss that deadline by a few weeks. Migration services packages are now slated for early next month.

Smartpath includes a data extraction tool from Evolutionary Technologies, Inc., enterprise models that can be used to implement the client/server software and an implementation methodology that will be delivered on Notes databases.

Analysts said the new Smartpath pricing shows that D&B Software is paying more attention to users' concerns.

# HP price cuts leading way Oracle to clarify Rdb pricing

By Michael Fitzgerald and Jaikumar Vijayan

Less than a week after Hewlett-Packard Co. bid for higher ground in the PC market by sharply cutting prices for the second time in three months, IBM has followed suit.

IBM last week announced it will reduce prices by up to 15% on its PC Server 300 series. Under the new pricing, effective immediately, a PC Server 300 based on a 60-MHz Pentium chip with a 1G-byte SCSI-2 hard drive will sell for \$4,499. The server sold for \$4,999 before the cuts.

IBM's pricing action last week was expected to be the precursor to similar actions from other major PC vendors as they try

to align their prices with HP's dramatic cuts, analysts said. Two weeks ago, HP cut prices by up to 26% on both PCs and servers.

## No war in sight

"Cuts like these were expected. There's probably going to be more pricing actions from major vendors, but there's going to be no price war," said Jennifer Munson, an analyst at WorkGroup Technologies, Inc. in Hampton, N.H.

Sources said both Compaq Computer Corp. and NEC Technologies, Inc. are also expected to reduce prices in the next few weeks. Compaq gave an early indicator this week when it cut prices by up to 15% on its LTE Elite notebooks. Prices for the Elite

now range from \$2,599 to \$5,799, a drop of \$400 on the low end and \$700 on the high end.

For the moment, though, HP is trying to set the pace in the PC market, said Richard Zwetckhenbaum, an analyst at International Data Corp. in Framingham, Mass. HP is "getting out in front of the market and wants to establish an image of price leadership," Zwetckhenbaum added.

Jacques Clay, HP's general manager of PCs, said the cuts are part of a strategy to raise HP's level of visibility in the overall market. In the past two years, aggressive moves such as this have helped HP vault from nowhere to become the sixth largest seller of PCs in the world.

By Mary Brandel and Neal Weinberg

■ The star of the Digital Equipment Corp. Users Society gathering this week in Anaheim, Calif., will actually be Oracle Corp.

The database vendor is expected to shed some much-anticipated light on its pricing strategy for the Rdb relational database Digital sold it in September.

"I think I'm comfortable with what's going on, on the technical side," said Ed Homko, a systems manager at Dr Pepper Co./The Seven-Up Co. in Dallas.

Pricing for Rdb under its new ownership, however, is another matter.

Last week, Beatriz Infante, vice president of open systems at Oracle, confirmed that the company will employ "industry-standard, user-based pricing" for Rdb. This will be a jolt for customers accustomed to the runtime version being bundled at no additional charge with OpenVMS systems.

Oracle will not publish a pricing list. "We intend to run [Rdb] as an ongoing,

supportable business, and that entails some pricing changes," Infante said. Existing Rdb users will pay the old price until the end of this year, she added.

Oracle will also demonstrate a version of its Oracle 7 database that takes advantage of the large amounts of in-line memory in 64-bit systems.

Early next year, Oracle 7.1.6 will be able to run in 8G bytes of memory rather than disk, resulting in eightfold performance improvement, Infante said.

Other key announcements are expected to include the following:

- Aspen Systems, Inc. in Wheat Ridge, Colo., one of the few OEMs using Alpha AXP semiconductors, will become the first outside company to license Digital's OpenVMS operating system.

- A DECnet/Open Systems Interconnect (OSI) upgrade will allow OpenVMS users to run applications over TCP/IP and OSI. "This will obviously be a help to DECnet users," said Michael Goulde, an analyst at the Patricia Seybold Group in Boston.

- A SCSI-based clustering of Alpha systems will result in lower-cost clustering.

# Two Strategies for Client/Server Applications Development

## Both in One Software...the SAS® System

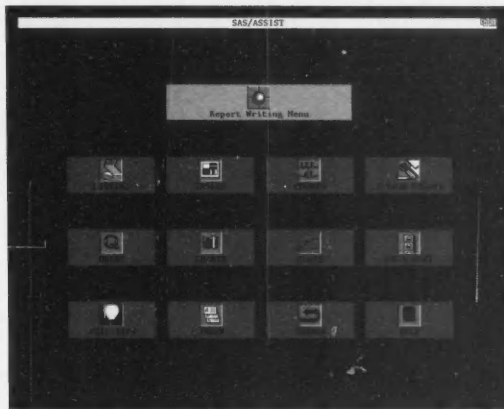
Only the world's leading information delivery system gives you two proven strategies for satisfying today's client/server applications development needs:

### Empower Your User Community

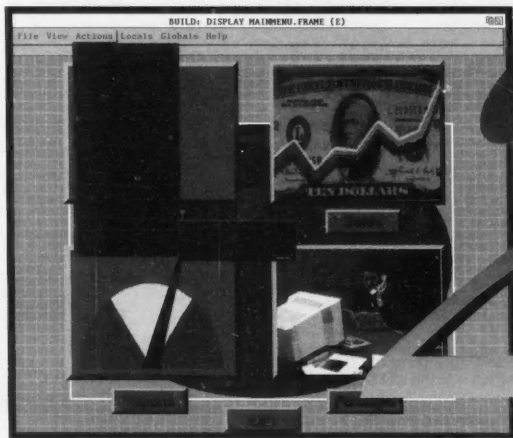
1

The SAS System offers a secure and manageable environment for making enterprise data available on demand. And for turning that data into useful business information for strategic decision making.

Through an intuitive, dynamic, and data-driven interface, even novice business users can handle the most sophisticated requests by themselves: ad hoc queries, reports, business graphs, forecasts, analyses, and more. By making the SAS System your standard for end user access and reporting, you'll empower users to satisfy their own information requests.



### Empower Your Applications Developers



With more self-reliant end users, developers are free to concentrate on implementing client/server applications critical to your business. Here, too, the SAS System satisfies your most demanding requirements by supporting an *iterative* approach to rapid applications development. Put strategic business systems in production quickly... even as you continue to develop and enhance them.

Object-oriented tools simplify and speed development. And support for multiple client/server models (including distributing application logic to the processor best equipped for the task) provides a flexibility unrivaled by "client only" development tools. What's more, the SAS System's portable architecture means applications look and run the same no matter where you deploy them, desktop to data center, preserving your applications investment over the long haul.

### Take a Minute Now to Take Years Off Your Development Cycles

With the SAS System, you'll improve business processes rather than just automating them. Users become more independent, developers more productive, and applications more valuable...today and tomorrow. For a closer look at the SAS System—and to find out how to receive these applications development tools for a free evaluation—just give us a call at 919-677-8200.



SAS Institute Inc.  
Sales and Marketing Division  
Phone 919-677-8200 □ Fax 919-677-8123  
In Canada: Phone 1-800-363-8397

SAS is a registered trademark of SAS Institute Inc. Copyright © 1994 by SAS Institute Inc.

# Beta users give NetWare 4.1 good grades

By Michael L. Sullivan-Trainor

Having experienced the trauma of migrating to Novell, Inc.'s NetWare 4.0 and dealing with the delays of 4.1, users in this Firing Line evaluation of NetWare 4.1 are more than a little relieved.

Not only does Novell's latest operating system include long-desired enhancements such as NetWare Directory Services (NDS), but it does so without degrading performance or causing any major migration headaches.

"We were running on NetWare 4.02," said a network consultant at a 1,000-node financial services firm. "4.1 was like a godsend. It's saving me a lot of hassle and time. They've definitely hit the target this time."

Four companies were involved in this evaluation: a financial services firm, a manufacturer, a systems integrator and a broadcasting company. Two of the users were early members of Novell's beta program and each had more than 10 months of experience with the product. The other users each had six months of experience.

One site had NetWare 4.1 in full production, while the others were still migrating and testing it. The system was running on Intel Corp.-based servers from Compaq Computer Corp. and other vendors. The number of nodes involved ranged from a single test node to 1,000.

## Ease of installation, migration

Set aside some time for this one. The evaluators reported that installation was time-consuming but glitch-free. The transition from the bindery structure to NDS requires a learning curve, but users reported that NDS is more forgiving of implementation errors in this version.

Broadcasting company: "The horror stories that we'd heard about installing NetWare 4.0 didn't materialize."

Systems integrator: "It's a big job; it's not a clean-cut upgrade. The structures are different between the bindery and the NDS directories. Installing it on one server is no big deal, but if you're going to install on more than one, you need to think about it carefully."

## Compatibility

The biggest problem with compatibility, according to the evaluators, is upgrading the NetWare Loadable Modules (NLM) from various application vendors that work with NetWare to the current version.

Systems integrator: "Compatibility could be better. I expect future NLM applications will come out that work directly with 4.1."

Financial services firm: "Testing the compatibility with current applications was our primary objective in the beta. Novell worked with our software providers to fix half a dozen bugs with the NLMs we were using. The problems were solved quickly."

## Accuracy and failure recovery

One major problem emerged in a multiple-server environment: The directory would not recognize one of the servers after the system was rebooted following a failure. Novell attributed this problem to the running of multiple beta versions of 4.1 and claimed it is not a problem otherwise.

Financial services firm: "We're transmitting 25G bytes of data with no corruptions or performance lag, even with compression."

NetWare 4.1	
<b>Novell, Inc.</b> PROVO, UTAH (800) 638-9273	
Ratings are based on a 1-to-5 scale, where 1 is very poor and 5 is very good. The ratings are an average of the scores given by four evaluators. Total score is the average of all the ratings.	
<b>TOTAL SCORE</b>	<b>4.0</b>
Ease of installation, migration	3.9
Compatibility with existing systems and software	4.0
Transmission accuracy and failure recovery	3.8
Speed and efficiency	4.5
Security management	4.0
Configuration management	4.0

other user did not want to give help desk personnel the authority to change passwords.

Financial services firm: "We have lots of departments and subdepartments. The new structure allows me to assign security access based on how the company is structured rather than having to identify each user. It has dramatically reduced our management time."

## Configuration management

Users said they liked the fact that menu-based commands replaced command line structures in setting system parameters. They also appreciated the flexibility they had to change the directories.

## Technical support/Price

As beta users, these customers received special deals

## Speed and efficiency

"Much faster" was the description users gave NetWare 4.1 vs. previous versions. One user said it was twice as fast as Version 4.02 in retrieving data and applications, including Microsoft Corp.'s Access, Borland International, Inc.'s Paradox and Lotus Development Corp.'s 1-2-3.

Manufacturer: "The NetWare Link Server Protocol reduced traffic overhead and was a significant improvement."

## Security management

Pet peeves swayed the users' views in this area. One user wanted supervisory authority as a requirement for access to the audit console. An

on technical support and pricing. Most users reported extra hand-holding and unusually fast access to Novell technicians. They also paid far less than average users in exchange for testing the product.

One exception was the broadcasting company, which had originally been won over by the support it received as a 3.x beta user. But this time around was a different story.

"It was not a good process. If I didn't call [the support technicians], they wouldn't care," the user said. Regarding price, the users said Novell was going in the right direction. "They're dropping 25% off the price when 4.1 ships," the manufacturer noted.

## Novell responds

Novell's Jim Greene, product line manager for NetWare server products, responds to issues:

**Crash recovery:** We tested NetWare 4.1 in our superlab of hundreds of servers. We discovered a few instances where we needed to synchronize different levels of beta and final code. The final gold code in 4.1 removes those anomalies.

**Supervisor authority:** We're working with a number of audit governing boards at banks, and they want the auditors to be independent and not have supervisor authority. You can set up authority to change passwords without giving supervisor authority.

**Technical support:** The 4.1 beta program was certainly one of the larger and more ambitious betas we've ever done. It was much larger than 3.11. We are committed to making sure our support quality doesn't drop.

# Seven services debut

By Laura DiDio

With its much-anticipated release of NetWare 4.1, Novell, Inc. is finally delivering on its 2-year-old promise to provide advanced features, services and, most important, stable code.

The latest release of the network operating system contains seven core services that Novell executives claim are essential to building distributed networks to take advantage of future applications and public networks. The crown jewel is NetWare Directory Services (NDS), said Richard King, executive vice president and general manager of Novell's NetWare Systems Group.

NDS is an object-oriented information database service that organizes all network resources — including users, groups, volumes and physical network devices such as printers and file servers — into a hierarchical tree structure. In practical terms, all departmental LANs and devices become one vir-

tual network that requires a user to enter a single log-on to access all services enterprise-wide.

The other integrated core services include integrated messaging, multiprotocol routing and wide-area network support, file and print services, enhanced network management and increased security.

## A key to your ID

Of particular note, NetWare 4.1's NDS authentication services uses the RSA Data Security, Inc. public key encryption technology that employs a private "key" to verify a user's identity.

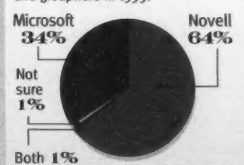
As an inducement to get the all-important channel to push NetWare 4.1, the multiprotocol router capability can be deployed by resellers to remotely manage customer sites, King said.

"This is a new business service and revenue stream and should prove to be a big motivating factor to get our resellers to migrate 3.x users to 4.1," King said.



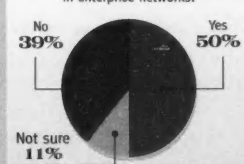
While users express confidence in Novell...

Which company do you have the most confidence in when it comes to providing networked applications and groupware in 1995?



... they are also keeping an open mind about Microsoft

Do you think NT Server is a viable alternative to NetWare 4.x in enterprise networks?



Base: 100 Microsoft and Novell users

Source: Computerworld survey



## NetWare

CONTINUED FROM PAGE 1

For others the choice is clear-cut and simple in favor of NT Server 3.5.

Steve Sommer, MIS director at New York law firm Hughes Hubbard & Reed, said he made the decision to scrap NetWare 3.12 and replace it with NT Server 3.5 "almost overnight."

Sommer said he chose NT Server 3.5 because of its scalability, built-in value-added applications, lower cost and domain naming structure.



**Novell's Richard King:**  
NDS will make migration smoother

"At this point, NT Server 3.5 appears to me to be a better enterprise solution and a better applications server than NetWare 4.1," Sommer explained.

Those comments typify the division over which giant has the edge and who will emerge as the eventual winner.

"The war is Novell's to win or lose. They've got the installed base, and Microsoft will have to fight hard to get users to switch," said Lee Doyle, an analyst at International Data Corp. in Framingham, Mass.

Rich Edwards, a senior analyst at Robertson Stephens & Co. in San Francisco, said Microsoft has put all of its marketing muscle behind NT Server 3.5 and priced it lower than NetWare 4.1 by 20% to 30%, depending on the configuration and volume.

"There's widespread acceptance of NT Server 3.5 even though it doesn't contain the enterprisewide directory services functionality of NDS," Edwards said. "The word is that NT Server is approaching 1 million units shipped."

### Window of opportunity

The door was left wide open for NT Server when "Novell stalled for two years with earlier NetWare 4.x releases that were either buggy or didn't deliver the promised features and functionality," Edwards said. "For many users, NT Server was the only viable alternative."

NetWare 4.1 incorporates the NetWare Directory Services (NDS) enterprisewide hierarchical tree, which gives businesses a single log-in for all users and devices spanning the entire network. NDS, along with the integrated messaging capabilities, multiprotocol routing and new network management tools, was designed to make the upgrade from 3.x smooth and nearly painless, said Richard King, executive vice president and general manager of Novell's NetWare Systems Group (see story page 14).

"Our feedback from beta-test sites indicates that NDS and the network management tools are cutting the time and complexity of the upgrade and lowering network administration costs by an av-

erage of 30%," King said.

John Verreault agreed. He is the supervisor of technical services at Hoechst Celanese, a pharmaceutical, chemical and textile firm in Montreal that is migrating from NetWare 4.02 to 4.1.

"The NDS facility will let us consolidate our network administration according to geographical region, which is a big time-saver," Verreault said. "And the ability within 4.1 to merge the directory trees will allow our 10,000 users to

browse and access corporate resources throughout North America."

Verreault also praised the advanced file compression capabilities in NetWare 4.1, which he said has doubled the company's disk storage capacity.

Novell sagely decided to deprive Microsoft of at least one potential weapon on the price front when it eliminated the price premiums for 4.1 that it had established for NetWare 4.x.

Current 4.x customers will upgrade

free of charge to 4.1. And NetWare 3.x users who are upgrading directly to 4.1 will pay \$995 for a 10-user license, \$2,795 for 100 users and \$4,995 for 250 users.

Novell will now give NetWare 4.1 customers the option of purchasing 500- and 1,000-user versions of the network operating system, priced at \$6,295 and \$8,395, respectively, King said.

**Analysts see slow NetWare move.** See page 57.

-FAX-

Imagine client/server software that **D&B SOFTWARE** financial information as well. Now works the way your company works. One that gives people throughout your enterprise instant access to the information they need. People in accounting and human resources. Not just project information, but imagine this software runs on your existing system and can be implemented with the least amount of migraines. O.K., stop imagining, because that's just a few of the advantages of SmartStream.

## HOW A FAX MACHINE CAN SOLVE YOUR CLIENT/SERVER PROBLEM.

To find out how it works just cut out this fax and send it to us. We'll fax back a tailored solution that will make you think your fax machine is the best piece of client/server hardware you've ever invested in.

TO: Jim Schaper, S.V.P. Worldwide Operations, D&B Software

FAX # 404-239-2220

FR: \_\_\_\_\_ CO: \_\_\_\_\_ FAX#: \_\_\_\_\_

Telephone: \_\_\_\_\_

Jim:

I don't have much time left. If you can answer these five issues, I might just give you a shot.

I need a client/server program that:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

Oh yeah, Jim, treat it like turtle soup, and make it snappy.

© 1994 Dun & Bradstreet Software, Inc. Key Code: CW 605

## OMG approves object standard

By Jean S. Bozman

After two months of intensive behind-the-scenes wrangling among vendors, the Object Management Group (OMG) finally agreed last week on a de facto standard that many users believe will become the cornerstone for distributed object computing.

The OMG set its stamp of approval on Common Object Request Broker Architecture (CORBA) 2.0. The broker will essentially detail the two-way communications between different vendors' object request broker implementations.

The group's secret ballot vote of 15-4 officially made the TCP/IP networking protocol the technical underpinning for moving objects over LANs and WANs. But the choice was controversial because IBM, Digital Equipment Corp. and Hewlett-Packard Co. backed an alternative proposal for the Open Software Foundation's (OSF) Distributed Computing Environment (DCE).

### Microsoft support a mystery

The new standard has the support of major systems vendors and software vendors. But the extent to which Microsoft Corp., an OMG member, will support the CORBA 2.0 standard in its products is still uncertain — and that is causing some confusion, users said. Microsoft proposed a link between CORBA and its Object Linking and Embedding (OLE) technology in September; it is still under consideration.

The CORBA 2.0 standard specification will start appearing in various vendors' products by next fall, but users are not expected to use objects widely until the late 1990s, industry analysts said last week.

"We are still waiting for implementation," said Tsvi Gal, a senior vice president of information technology at BankAmerica Corp. in Concord, Calif. "Since [the OMG vendor members] are using TCP/IP, which is the lowest common denominator, these products should come within six months."

Even after CORBA 2.0 implementations are shipped, users will spend a lot of time evaluating them and setting up pilot projects, Gal said. But to accommodate large systems vendors and user sites, CORBA 2.0 also supports the DCE as an option [CW, Nov. 7].

Stanford University, an OSF member, plans to migrate to DCE networks next year, said Raman Khanna, director of distributed computing and communications systems. He said he hopes the OMG and OSF standards — as well as Microsoft's OLE — will be on the same track by then.

"We're doing some prototyping using objects, but there's this whole confusion about which approach to use: the CORBA approach or Microsoft's OLE," Khanna said.

Yet while CORBA 2.0 is now a standard specification, vendors still have the option to implement it in many ways.

"Every vendor will have a CORBA-compliant [object request broker], and then it will have some proprietary extensions — additional bells and whistles," said Natasha Krol, director of advanced information management strategies at Meta Group, Inc. in Stamford, Conn. "This game is as old as computers."

## CA-Unicenter gains SNMP support

By Thomas Hoffman

**In response to customer demands, Computer Associates International, Inc. has added Simple Network Management Protocol (SNMP) support to its forthcoming release of CA-Unicenter 1.1, which will ship this week.**

The feature will allow the systems management package to interface more seamlessly with network management products such as Hewlett-Packard Co.'s OpenView and Sun Microsystems, Inc.'s SunNet Manager through SNMP management information base agents. It reflects yet another move by CA to respond to CA-Unicenter's shortcomings, as identified by customers.

In August, CA slashed the price of CA-Unicenter by up to 86%, a move aimed at luring prospective low-end customers that otherwise could not afford the package [CW, Aug. 29]. Last month, CA began integrating into CA-Unicenter a cross-platform software distribution tool and two intelligent agents designed for database and systems event detection [CW, Nov. 28].

By not allowing CA-Unicenter 1.0 to integrate easily with complementary packages, "we made some mistakes,

but we've since learned from them," said Yogesh Gupta, senior vice president of open systems at CA. By providing SNMP support, the systems management package will, for example, let systems administrators detect a failed node on a network.

### Good reception

The SNMP capabilities have been well received by CA-Unicenter customers, which were forced to write and maintain their own interfaces among complementary packages.

"That type of flexibility should make Unicenter much more available to other products and should reduce our maintenance requirements," said Peter A. Ginocchio, manager of computer operations at Central States Health and Welfare and Pension Fund, a funds manager in Rosemont, Ill.

Ginocchio said his company plans to install CA-Unicenter/Star to interface with mainframe packages such as CA-7 and IBM's Information Management software utilities.

Commerce Clearing House, Inc., a Riverwoods, Ill., provider of tax and

business law software and services, had been using CA-Unicenter 1.0 to manage seven Unix-based HP 9000 Corporate Business Servers that run the company's core business applications. Commerce Clearing House's beta

testing of CA-Unicenter 1.1 has shown the upgraded product to offer more robust tape management while consuming fewer systems resources, said Dave Dubnick, manager of technology operations. "Many of the features in Unicenter 1.1 are those that we asked for," Dubnick said.

Still, there are some limits to SNMP capabilities. For example, systems administrators would be hard-pressed to

use the protocol to manage multiple platforms over a wide-area network configuration because a high volume of network traffic would make those communications difficult, according to John Mann, a senior analyst at The Yankee Group in Boston.

"But it is reasonable for Unicenter to poll on a local-area network since it's local," Mann added.



CA's Yogesh Gupta: "We've learned from our mistakes"

## Digital mulls Motorola bid for plant

By Neal Weinberg

Digital Equipment Corp. last week confirmed that Motorola, Inc. has offered to buy Digital's Alpha AXP semiconductor plant in South Queensferry, Scotland.

Digital Chief Executive Officer Robert Palmer has been encouraging offers from other chip manufacturers to help his company deal with its money-draining overcapacity problem. The South Queensferry sale would solve that problem and net the company some much needed cash — anywhere from \$100 million to \$200 million.

Digital does not have the volume to support large-scale fabrication, but Motorola, the world's second-largest semiconductor manufacturer, does, said Andrew Allison, editor of the newsletter "Inside the New Computer Industry" in Carmel, Calif.

### Mass consolidation

Details of the possible sale are sketchy, but the most likely scenario, according to Terry Shannon, an analyst at Illuminata in Ashland, Mass., is that Digital will consolidate its Alpha chip production into its state-of-the-art, \$425 million plant in Hudson, Mass.

That facility is testing Digital's newest generation of Alpha chips, the EV-6, with full production slated for 1996. The South Queensferry plant and an older plant in Hudson produce the current EV-4 and EV-4/5 chips.

When Digital launched Alpha two years ago, the company said it was vital that the chip become an industry standard so semiconductor manufacturing could become self-sufficient through the sale of chips to other companies. "It obvi-

ously hasn't transpired the way they'd like," said George Elling, an analyst at Merrill Lynch & Co. in New York.

Digital's Alpha sales this year increased 164% over 1993. And Alpha sales have surpassed VAX sales, according to the latest quarterly results.

The sale of the South Queensferry plant is not expected to impact Digital's ability to meet Alpha demand. But one possible wrinkle in the plant sale involves Advanced Micro Devices, Inc. (AMD), which has a contract with Digital into 1996 for 486 chips produced at South Queensferry. A sale

would have no effect on the contract, said Jim Lochmiller, an AMD spokesman.

### Too fast for its own good

The contrast between Motorola's and AMD's thirst for chip manufacturing space and Digital's overcapacity raises the larger question of why Digital has been unable to generate sufficient interest in Alpha's 64-bit technology. Two years after the company introduced Alpha as the cornerstone of its comeback strategy, the chip is in danger of becoming just a house brand.

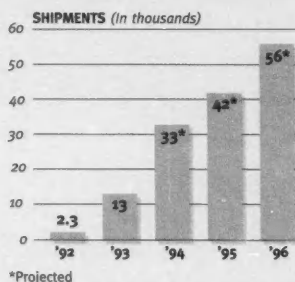
The irony is that while everyone agrees that Alpha is a fast, powerful

chip, it might even be too fast.

"It's like starting an auto company and coming out with an automobile that does 200 miles an hour. If you don't have the roadways to take advantage of it, and if the primary use is commuting, then you don't need the extra performance," said Franc Romano, an analyst at Aberdeen Group in Boston.

He said Alpha has the potential to become a major force in the growing fields of multimedia and video imaging.

U.S. Alpha shipments



\*Projected  
Source: WorkGroup Technologies, Inc., Hampton, N.H.

The TPC says our  
servers have the best  
price/performance.

D.H. Brown<sup>®</sup> says  
we're #1 in single system  
high availability.



And now IDC<sup>®</sup> says  
we're the world leader  
in medium-scale  
UNIX systems.

How many more  
reasons do you need  
to put us on your  
short list?

If you're so much as considering moving to a distributed environment, consider us.

Our open servers give you more of what you're looking for.

---

### Leader in price/performance.

---

Like more horsepower. For less money. An area where our servers have traditionally come out on top.

And now even more so. In fact, the Transaction Processing Performance Council (TPC™) recently posted a record 1,649 transactions per second (tps-A)<sup>1</sup> with a cluster of our Model 3575 servers running AT&T LifeKeeper™ Fault Resilient Systems software.

Which means that at \$6,944 per tps-A, our clustered servers deliver the best price/performance in the industry.

Better than HP. IBM. Compaq.

Better than anybody.

---

### Highest single system availability.

---

We didn't say it. D.H. Brown Associates® did. They evaluated six major UNIX-based high availability solutions.<sup>2</sup>

Here's what they found.

Ours provided the best single system availability. Beating out competitors like IBM, Digital, HP and Sun.

In the dizzying world of client/server, that could make all the difference. Between

a solution that saves you a bundle. Or one that costs you sleep.

---

### #1 in medium-scale system sales.

---

We're not only the leader in server price/performance and reliability.

According to IDC, we're also the leader in medium-scale Unix system sales.<sup>3</sup> With 163% growth last year alone.

MEDIUM-SCALE UNIX SYSTEM MARKET SHARE	
AT&T Global Information Solutions	14.4%
HP	10.2%
Sequent	8.6%
Data General	7.1%
Sun Microsystems	7%
IBM	6.4%

---

### Call us at 1 800 421-7942.

---

So if you're planning to move to a distributed environment, give us a call.

We'll send you our free Server Information Kit. With magazine excerpts and consultant reports.

And make sure you put us on your short list.

You'll be in good company.

<sup>1</sup>TPC-A Benchmark Tests, July 1994. TPC-A, tps-A and TPC are trademarks of the Transaction Processing Performance Council.

<sup>2</sup>UNIX Leapfrogs in Commercial Availability" ©1994 D.H. Brown Associates, Inc.

<sup>3</sup>"Unix Systems Market, 1993-1998" ©1994 International Data Corporation.

© 1994 AT&T Global Information Solutions. All Rights Reserved.

Distributed. Advanced.  
Faster. Safer. Really.

**GET IT.**  
move  
USE IT.™

*Now that NCR and AT&T are one, computing and communications have come together to help you get, move, and use information.*



**AT&T**

Global Information  
Solutions

# Few IS projects come in on time, on budget

By Rosemary Cafasso

Application development projects are still the black eye of some information systems organizations: Nearly one-third of all projects fail and more than half come in over budget.

The good news is that more than half

of the IS executives surveyed in a recent report said there are actually fewer failures today than there were five to 10 years ago.

These and other findings are part of a report, "The High Cost of Chaos," released last week by The Standish Group International, Inc. in Dennis, Mass.

The research firm recently surveyed 365 companies that together represent more than 8,000 development projects. According to those respondents, only 16% of all projects come in on time and on budget.

"This is disappointing and disturbing, but it is consistent with reality," said

Jack Cooper, chief information officer at Joseph E. Seagram & Sons in New York, commenting on the survey results.

Also, the bigger the company, the bigger the problems, the Standish Group report said. It found that large corporations—defined as having more than \$500 million in revenue—typically have low-



## NATURAL New Dimension: Breaking barriers.

Giving your all. Pushing yourself to the limit. And beyond.

### The goal:

To compete at the highest level. And leave your rivals behind.

### The means:

World-beating information technology. Enterprise-wide client-server solutions of limitless power. Forging links between each and every platform. Between desktop PC, UNIX and mainframe.

### The prize:

NATURAL, the 4GL from SOFTWARE AG. Its PC component NATURAL ND gives you

the strength to push yourself further than ever before. To break down barriers. And create genuine enterprise-wide information processing.

Because NATURAL ND is the first truly integrated, graphically supported development and runtime environment for mission-critical applications.

Push yourself further. And triumph.

SOFTWARE AG. Get in touch.  
Call 1-800-423-2227.

**SOFTWARE AG**

### The ups and downs of software projects

#### TOP 5 REASONS FOR SUCCESS: A

- User involvement
- Executive management support
- Clear statement of requirements
- Proper planning
- Realistic expectations

#### TOP 5 REASONS FOR FAILURE: F

- Lack of user input
- Incomplete requirements and specifications
- Changing requirements and specifications
- Lack of executive support
- Technological incompetence

Base: 365 respondents

Source: The Standish Group International, Inc., Dennis, Mass.

er-than-average success rates with development projects.

Coming in with a 9% success rate, large companies suffer from projects that are too large and have too many requirements to fulfill on a timely basis, the research firm said.

The Standish Group reported that in the average large corporate project, only 42% of the planned features and functions end up in the final version of the software.

### Always late, always over

Some industry analysts suggest that some of the Standish Group results are too conservative and the percentages of cost overruns in particular are likely higher.

"Year to year, you would hope the percentages would go down, but projects are always late and over budget," said Ed Acly, an analyst at International Data Corp. in Framingham, Mass.

The Standish Group reported that one reason projects still fail is because IS typically sweeps disasters under the rug instead of learning from them.

"With all the methodologies and software engineering and so forth, we still don't know why they fail," said Standish Group Chairman James H. Johnson.

Cooper said he suspects projects flounder because all the new technologies and design tools cannot take away this basic fact: The essence of a development project is turning abstract concepts into working products.

"Creation and construction are always difficult," Cooper said. "There is no magical solution."



# Our smallest portable just won big.



**PORTÉGÉ** The Grand Slam. The Triple Crown. The Oscars of high technology. Toshiba's ultraportable 4.4 pound Portégé™ notebook has swept three of the computer industry's most coveted awards: Product of the Year, Portable MVP and the award for Technical Excellence.

The Portégé's remarkable balance of power, size and usability, coupled with 12 major awards, makes it easy to understand why it's

the best in its class. There's a powerful i486™ processor, our acclaimed AccuPoint™ pointing device, an ultra-lightweight Lithium Ion battery that runs up to six hours, a stunning SVGA color active matrix display and built-in PCMCIA expandability.

See how far Toshiba has taken every aspect of portable computing. And think where it can take you. Portégé. It's the shape of things to go. Call 1-800-457-7777 for the dealer nearest you.

#### T3600CT

- 50MHz i486™DX2
- 8.4" dia. color TFT-LCD active matrix display—256 color SVGA
- 8MB RAM (expandable to 24MB)

#### T3400CT

- 33MHz SL Enhanced i486™SX
- 7.8" dia. color TFT-LCD active matrix display—256 color SVGA
- 4MB RAM (expandable to 20MB)

#### BOTH MODELS

- 250MB HDD
- Lithium Ion battery
- Type II (5mm) PCMCIA slot
- 4.4 lbs.—7.9" x 9.9" x 1.8"

- AccuPoint™ integrated pointing device
- Integrated BitBLT graphics accelerator
- VL local-bus video
- Ports: serial, parallel, FDD, and VGA adapter

- Optional Port Replicator
- MS-DOS®, Microsoft Windows™, and CommWorks™ for Windows



In Touch with Tomorrow  
**TOSHIBA**



LEGENT

Back in the 15th century, this was a generally accepted view of Hell. Today, of course, we can

see how inaccurate it really is. Not one person, for instance, is shown trying to manage a corporation's distributed systems. You can probably forgive the artist for this oversight. But you may be wondering when someone will deliver the management software that can help you take care of this mess.

At Legent, being that someone is what we're all about. And so far, our efforts have resulted in the most extensive set of industrial-strength, distributed systems management tools available. We've also developed an open architecture called XPE™ that we think is pretty remarkable (some of the toughest analysts in the industry tend to agree). XPE lets our software work together across almost anything you can wire together, regardless of function or platform, from mainframes to UNIX workstations to PC LANs. Which means you can manage your distributed systems from the platform of your choice, something our customers tell us has definitely made their lives easier. Is it Paradise? No, not yet. But we can promise you one thing:

It's a lot better than where you are right now.

For more information about Legent products and strategies, call 1 800 676-5468 extension 2500. We'll fax you a technical overview the same business day.



# Users still wrestle with E-mail privacy

Lack of clearly defined policies leaves many wary

By Suruchi Mohan

The thorny ethical questions raised about managers reading their employees' electronic mail remain largely unresolved, many users at the recent E-Mail

World conference in Boston said.

To some employees, E-mail is the electronic version of a sealed letter and therefore sacrosanct. To them, reading another's E-mail is clearly unethical.

Yet others argue that excessive per-

sonal use of this medium makes monitoring—though hardly desirable—at least justifiable.

Network administrators do have to check to see if excessive mail stored on the network is obstructing traffic. However, users stressed that even those responsibilities do not give administrators

the right to read the messages.

"Most employees think E-mail is personal; it is not," cautioned Fred Lyell, senior product manager of clinical systems at Columbia/HCA Information Services, Inc., a health care corporation in Nashville. A certain amount of personal traffic over E-mail should be permissible, such as asking a fellow employee to schedule lunch, he added, while exchanging gossip about office romances ought to be verboten.

Nina Burns, president of Creative Networks, a consultancy in Palo Alto, Calif., said privacy surrounding E-mail should be the same as that around inter-office mail, which is regarded as personal. But that is not the case because of the difference in the medium, she added. If privacy needs limit the ability of administrators to monitor traffic, the network can end up in trouble.

Many employees assume that ethical considerations will keep managers from reading their E-mail. Yet this assumption can be dangerous when a company has no stated or written policy on E-mail privacy, said Dave Bonisar, a policy analyst at the Electronic Privacy Information Center in Washington.

The lack of such a policy means that neither managers nor employees know where the company stands on privacy issues. And an overwhelmingly large number of companies do not have a written policy, making them vulnerable to lawsuits, Bonisar said.

When companies do not have a well-defined policy, they also face the danger that employees will misuse E-mail or that overzealous managers will trip themselves up in embarrassing situations, said Walter Ulrich, a director at Arthur D. Little in Los Angeles.

## False sense of security

Many users feel that having passwords guarantees their privacy, explained Bill Moroney, executive director at the Electronic Messaging Association in Arlington, Va. "Once they have the password, they feel no one can get into the computer or open the mail," he said.

But network administrators of systems such as Novell, Inc.'s NetWare can indeed read E-mail. That capability bothers Scott Schultheis, a PC network specialist at Central Soya in Fort Wayne, Ind. "Even people with supervisor's rights on the network should not be able to read the president's mail," he said. Yet managers should have the ability to see whether their direct reports are doing their assigned tasks, he added.

Because it is possible to steal information and harass fellow workers using E-mail, employers do have to walk a fine line between taking the Big Brother approach and protecting their assets and employees, Moroney said.

"MY CLIENT/SERVER PROJECT IS STALLED. I DON'T NEED ANOTHER TOOL. I NEED A STRATEGY."

ENTERPRISE  
OBJECT  
ARCHITECTURE

What you need is Enterprise Object Architecture™ (EOA). The only object-oriented strategy that lets you migrate to client/server computing while fully leveraging your investment in existing people, tools and methodologies.

## SUCCESSFULLY MIGRATE AT YOUR OWN PACE.

Developed by Digitalk, the company that brought Smalltalk/V® and PARTS® to the Fortune 500, Enterprise Object Architecture is a comprehensive distributed component strategy. But EOA's most important component is people. Yours and ours.

Your people will provide insight

into your corporate goals and culture. Our world-class EOA experts will provide as much—or as little—analysis, design, planning, consulting and training as your unique situation requires. It's a partnership that can take your enterprise into the next century. And it's already working at major service and manufacturing companies.

## A FORTUNE 500 STRATEGY.

Tools may put out fires and provide short-term savings, but they won't solve the long-term issues of enterprise-scale development, data access and distribution of business logic.

But with Digitalk's Enterprise Object Architecture, hundreds of companies—including

Fortune 500 corporations—are addressing critical client/server issues with their own legacy systems and people. The result is a tremendous savings in time, money and human resources.

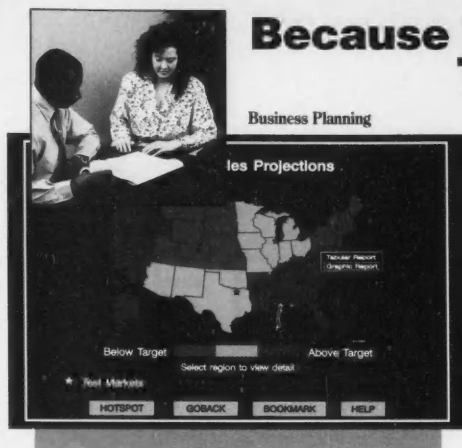
## CALL FOR OUR FREE EOA WHITE PAPER.

Don't wait for your client/server project to stall. And don't reach for another development tool. Our comprehensive strategy for migrating to client/server computing is in our Enterprise Object Architecture White Paper.

Call 1-800-531-2344 x 802 now to request yours. Because you don't need another tool. You need a strategy that works.

OBJECT ARCHITECTURE FOR CLIENT/SERVER.

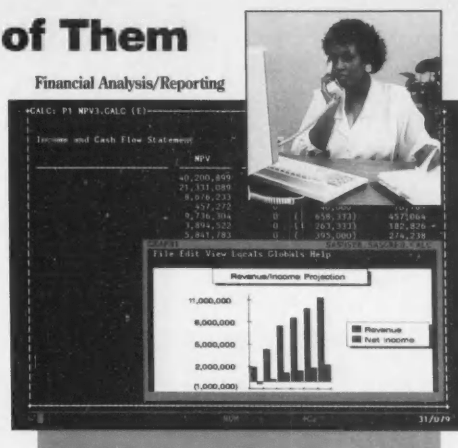
**DIGITALTALK**



Because There Are More of Them  
Than There Are  
of You...

The  
SAS<sup>®</sup>  
System

for Information Delivery



EIS



The CEO needs visual checks on all the factors critical to the success of the business. The CFO wants a "small" change in the financial reports. The marketing VP is anxiously awaiting pricing models. And they're *still* waiting for inventory and quality monitoring systems out on the factory floor. How can one IS manager—with so little time, so few resources, and so many budget constraints—meet the diverse needs of so many clients? The answer is the SAS System for Information Delivery.

### Integrated Applications for Enterprise-Wide Productivity

Unlike stand-alone solutions—which drain your software budget and drive up training and support costs—the SAS System gives you a cohesive, enterprise-wide application strategy. One that fits the needs of the executive suite, the manufacturing floor, and everywhere in between. One that supports cooperative processing across hardware platforms. And one that responds immediately to new or shifting applications demands. Virtually any application that involves accessing, managing, analyzing, and presenting data is available within the SAS System's information delivery environment.

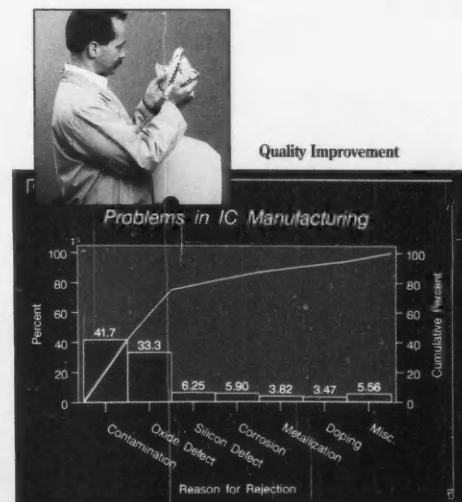
### Call Today for a Free Video Preview of the World's Leading Information Delivery System.

See for yourself why the SAS System is the only software you'll ever need. Give us a call at 919-677-8200 for your free video preview. Also ask for details about the free SAS System Executive Briefing...coming soon in your area.

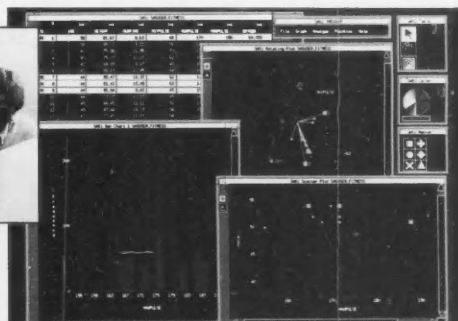


SAS Institute Inc.  
Software Sales Division  
SAS Campus Drive □ Cary, NC 27513  
Phone 919-677-8200 □ Fax 919-677-8123

SAS is a registered trademark of SAS Institute Inc. Copyright © 1992 by SAS Institute Inc. Printed in the USA.



Data Visualization





**MAZDA'S U.S. CHIEF**

**CAN'T WAIT TO**

**GET WARPED.**





*OS/2 is in its third rev, so it's solid, stable, and mature.*

Mike Anzis is the I.S. man behind the wheel of Mazda's computers. And OS/2® Warp is about to make his life easier.

As Mike puts it: "We use OS/2 on our headquarters' client/server systems. It's also installed in our 900 dealerships.

But until now, we haven't been able to get

OS/2 everywhere we need it—on laptops in the field. OS/2 Warp changes all that." OS/2 Warp is the 32-bit, multitasking, Windows™-friendly way to run a computer. With simple installation and



*A toolbar gets users into their applications quickly and easily.*

proven reliability, OS/2 Warp is a total computing solution that performs ruggedly at every level.

From a basic 4MB laptop to a client/server system, the OS/2 family now scales an even

wider variety of PC platforms.

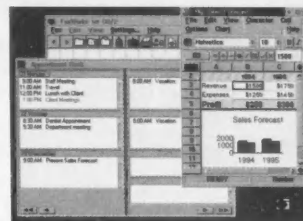
And OS/2 Warp is a real communicator.

With fax, Internet e-mail, and desktop conferencing, there

isn't an easier way to keep those out on the road in the loop.

OS/2 Warp also offers Mike Anzis rock-solid reliability. "I know from years of experience with OS/2, I can trust it to keep performing. Now I can enjoy this peace of mind at every level."

OS/2 Warp is available for under \$90. To get warped, stop by your local software dealer, or call 1 800 3 IBM-OS2. Ask for a free demo disk.



*The BonusPak gives mobile users the applications they need.*

The new 32-bit, multitasking, multimedia, Internet-accessed, crash-protected, Windows-friendly, totally cool way to run your computer. **OS/2® WARP**



OS/2 Warp is available from your software dealer. It's also available from IBM for \$89 by calling 1 800 3 IBM-OS2.

Reseller prices may vary. OS/2 Warp consists of OS/2 version 3 and BonusPak. IBM, Operating System/2 and OS/2 are registered trademarks of the International Business Machines Corporation. Crash Protection and the OS/2 logo are trademarks of IBM. Windows is a trademark of Microsoft Corporation. ©1994 IBM Corp. All rights reserved.

# Civic networks concern open meetings advocates

By Mitch Betts

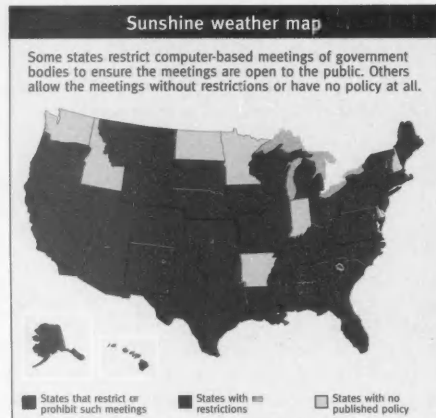
They have names like CityNet, StateNet and Electronic Town Hall. Almost every week some state or local agency starts a computer bulletin board, Internet link or civic network in hopes of improving citizens' access to government.

But some researchers worry about a darker side: The electronic-mail networks could be used by government officials — intentionally or not — to circumvent the "sunshine laws" meant to keep government meetings and records open to the public.

"E-mail is a marvelous tool, but there will be a temptation for public officials to confer with colleagues on topics that would violate the open-meetings laws in some states," warned Bill Chamberlin, director of the University of Florida's Brechner Center for Freedom of Information in Gainesville.

The danger is that agencies, boards and councils will deliberate on official business via private E-mail or electronic conferences, experts said. Council members could cut a deal in cyberspace on where to put the next trash dump, for example.

A few cases have already emerged. In 1991, the Santa Monica, Calif., school board had to close down its private computer conferencing system after the city attorney said it violated the state open-meetings law. More recently, Florida's at-



Source: April 1994, study by Susan D. Ross, Brechner Center for Freedom of Information, Gainesville, Fla.

torney general issued an opinion that E-mail is covered by that state's sunshine law, Chamberlin said.

## Alooming threat

Although there is little case law on electronic evasion of sunshine laws, experts are worried because "teleconferencing is already a problem, and E-mail is an even more convenient tool," noted Harry Hammitt, editor of the newsletter "Access Reports" in Lynchburg, Va.

Open-meetings laws typically apply

even if just two officials discussed government business via computer networking, Chamberlin said.

Susan D. Ross, a research fellow at the Brechner Center, said her recent study of the 50 states found that more than half restrict or prohibit electronic meetings for government bodies (see map). On the other hand, eight states have taken no stand on the issue and may need to update their laws, she said.

Even a conscientious official may have trouble obeying the rules, however.

when a quorum of council members deliberates on government business, with the exception of closed topics such as personnel actions and pending litigation. The laws usually require advance public notice of government meetings and public release of the minutes and votes taken.

But the legalities vary greatly by state, especially when it comes to coverage of electronic discussions. In Florida, the open-meetings law would apply

when a quorum of council members deliberates on government business, with the exception of closed topics such as personnel actions and pending litigation. The laws usually require advance public notice of government meetings and public release of the minutes and votes taken.

for one thing, a jurisdiction's court rulings, state laws and administrative procedures are not always in agreement on what is proper sunshine conduct, Ross said. Chamberlin added that public officials get very little training on sunshine ethics.

"Rather than try to police it, which would be impossible, just put up a warning notice [on the system] not to conduct government transactions," suggested Mike Godwin, staff counsel at the Electronic Frontier Foundation in Washington.

## Legal 'fantasies'

Henry H. Perritt Jr., a law professor at Villanova University in Villanova, Pa., maintains that the open-meetings laws are properly focused on the government decision-making process. He argued that there should be no problem with networks focused on public access, fact gathering and opinion gathering.

"These experimental networks should not be held back by fantasies about legal problems," Perritt said.

No one is arguing that the new civic networks should be ditched — only that sunshine features should be built into the system.

"Electronic meetings can be used to exclude the public or they can provide a whole new avenue for increasing access to public meetings," Ross said. "It's a very delicate balancing act."

## Feds resist upgrade

CONTINUED FROM PAGE 1

"This is a controversial, confusing issue," said a bank official who asked not to be named. "We have invested tremendously in [current encryption technology], and rightfully so. Unfortunately, we are moving to change, and any change is costly, and any change may not be exportable."

Eddie Zeitler, vice president of information security at Fidelity Investment Co. in Boston, noted that while the DES algorithm "has held up incredibly well over 20 years," the issue is the 56-bit key length. "Machines are getting fast enough now that it's possible to do a brute-force search to find a key that works," he explained.

Many people suspect that the government, led by the

National Security Agency, opposes the export and widespread adoption of triple-DES because the agency fears triple-DES would also boost the security of spies and criminals. Moreover, the NSA opposes export of any strong encryption option that competes with its own "key-escrow" method embodied in the controversial Clipper chip.

For the record, the NSA says it is opposed to triple-DES because it may be flawed technically — a matter of dispute among cryptographers.

"We have this irony that you can't export triple-DES, but if it were really full of holes, the NSA wouldn't care about exports," said Mike Godwin, staff counsel at the Electronic Frontier Foundation. "What they really want to do is undermine confidence in alternatives to key-escrow systems."

Harold Deal, chairman of the ANSI-accredited X9 committee for financial services standards and a vice

president at NationsBank Corp. in Charlotte, N.C., said a bank could in theory avoid the export issue by buying triple-DES products from foreign suppliers.

"But we worry about what the [government] would say when they audit us," Deal said. "If there's a law that says you can't export triple-DES and we're using it in London, we would at least be open to some criticism."

The X9 committee recently sent ballots to its members asking whether it should proceed to develop an ANSI standard for triple-DES. An earlier ballot brought a "no" vote from the NSA and an unusually high number of abstentions from member banks — reflecting the uncertainty that surrounds the issue.

Some users have not taken kindly to the NSA's efforts to block the development of a standard for triple-DES. "We need the ANSI standard for interoperability," Zeitler said. "We use single-strength DES now because there is no agreed upon way to implement triple-DES."

Stephen T. Kent, chief scientist for security technology at Bolt Beranek and Newman, Inc., said the banking industry's interest in triple-DES is misplaced because triple-DES is aimed primarily at strengthening confidentiality, while the industry has traditionally been more worried about message integrity and user authentication.

Kent said banks should be moving to the newer technology embodied in public-key cryptography and digital signatures, which offer better guarantees of integrity and authentication. "Going to triple-DES doesn't make a lot of sense," he said. "It is tweaking the wrong part of the solution space."

Stephen T. Walker, president of Trusted Information Systems, Inc. in Glenwood, Md., said banks may have little choice. "As I look at the options now, I view triple-DES, correctly implemented, as the only plausible path," he said. Other algorithms simply have not been around long enough to establish confidence in the marketplace, he added.

## An option in the wings

**A**lbert R. Belisle, former chairman of the American Bankers Association's information systems security committee, said the banking industry and the NSA could conceivably agree on a strong, exportable encryption scheme to replace DES. But it could not have the drawbacks of the Clipper key-escrow approach, in which the U.S. government holds the keys to unlocking messages.

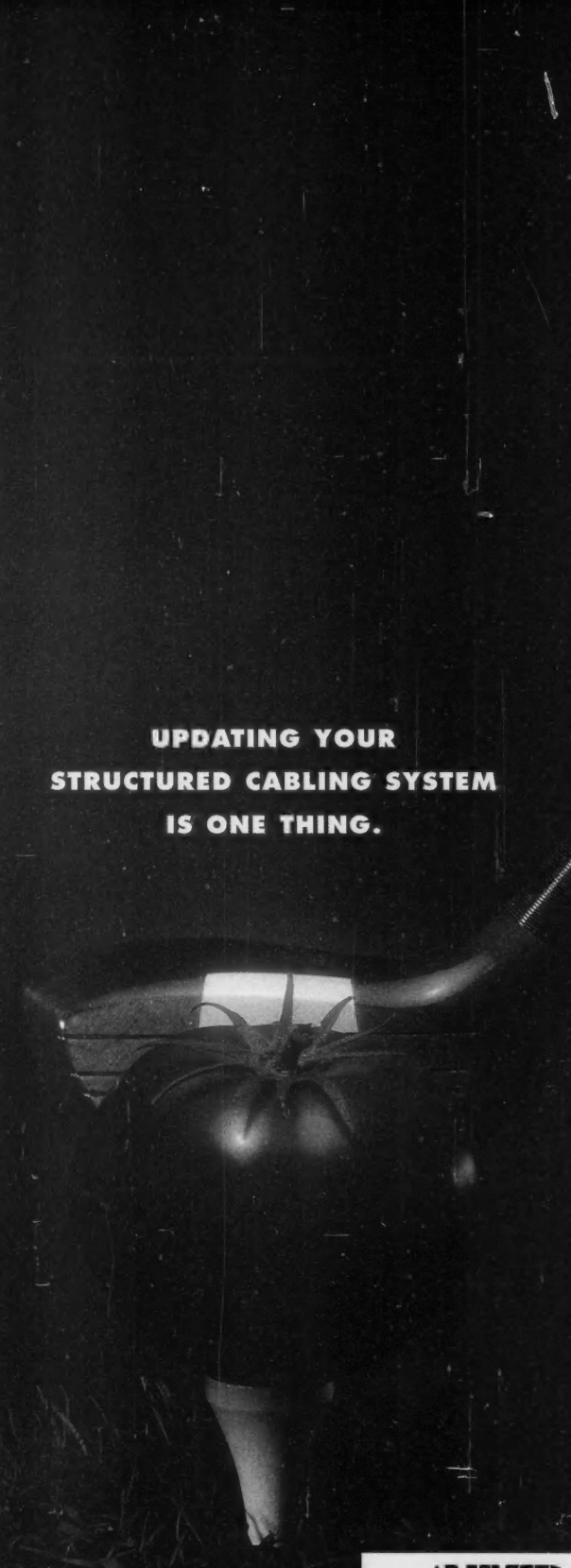
"I do not support Clipper, but I do recognize the need to move beyond DES," said Belisle, who works at a large U.S. bank. "Maybe key-escrow isn't such a bad idea in another implementation. It could be useful if we were our own escrow agents."

Meanwhile, although it has not made a formal announcement, RSA Data Security, Inc. in Redwood City, Calif., has developed an encryption algorithm, called RC5, said to overcome the objections to DES.

RC5 is 60 times as fast and 5% as big as DES and can be configured by a user to be far stronger, said Jim Bidzos, president of RSA. The user can vary the key size, data block size and other factors important to efficiency and security, he said.

Bidzos said RSA will publish the specifications for RC5, allowing anyone worldwide to implement it and thereby sidestepping the export issue.

—Gary H. Anthes



**UPDATING YOUR  
STRUCTURED CABLING SYSTEM  
IS ONE THING.**

*Today, understanding the need to update your structured cabling system isn't the problem. It's knowing who to partner with to make it happen. You need a partner who knows Category 5 Cabling products. You need a partner like Ortronics. With Ortronics Open System Architecture®, you get a cabling system designed to comply with the EIA/TIA 568 standard. Plus training, 15 year warranty and certification programs capable of driving your installation to the leading edge of technology. So who do you turn to to make it happen?*

**MAKING SURE  
IT GOES THE DISTANCE  
IS ANOTHER.**

*Anixter. Nobody knows networking like we do. It starts by partnering with leaders like Ortronics. It continues with Anixter's technical expertise and support that you can count on to satisfy your evolving networking needs. To integrate your existing voice and data equipment and drive your cabling system far into the future, here's one partnership ready to take you the distance.*

**ANIXTER**



**ORTRONICS**  
OPEN SYSTEM ARCHITECTURE

**1 - 8 0 0 - A N I X T E R**

©1994 Anixter Inc.  
Ortronics Open System Architecture is a  
registered trademark of Ortronics.





## ORACLE WANTS YOU TO GET RID OF MAY WE SUGGEST THE ONLY REAS

It's time for you to fix bayonets. And hold the line on your mainframe.

Oracle's desire stems from a fundamental deficiency in its system architecture. Theirs was never designed to integrate the mainframe. No migration strategy there.

But Sybase's was — from the start. We've been building solutions to leverage the mainframe for ten years.

With SYBASE®, old mainframes never die. They just lose their limitations.

**IT'S A CLIENT. IT'S A SERVER.  
IT'S WHATEVER YOU  
NEED IT TO BE.**

Architecture is the key to interoperability. With Sybase's truly open architecture, your mainframe is more valuable

today than it has ever been before.

Suddenly the mainframe plays so many more roles. It's a great data warehouse. Its processing speed makes it a very powerful server. And it's a client, too. For instance, a mainframe-based application can access a UNIX database, just as though that database was on the mainframe.

With Sybase's Enterprise CONNECT™



## OF YOUR MAINFRAME. SONABLE RESPONSE.

interoperability products, you can get data in and out of the mainframe without violating the security or business logic you rely on. So you can safely give read/write access to more users, to handle more transactions, at PCs and workstations throughout your enterprise.

That's what true interoperability is. Oracle's capabilities are clearly no match.

### BIG COMPANIES LEVERAGE THEIR BIG IRON.

700 of the Fortune 1,000 have integrated their mainframes with SYBASE. With Sybase's best-of-breed products, they know that whatever they wish to integrate can be integrated. Open architecture gives them the flexibility to allow

changing business needs to drive their computing — not the other way around.

If your business is anything like theirs, you need your mainframe too.

As for those who would tell you otherwise, give them their marching orders.

### WHAT THE CUSTOMERS SAY:

*"When I hear people talk about getting rid of the mainframe, I know they don't understand my business. For us to be successful, we need to maximize all of the computing resources available to us. That means connecting desktop workstations, LAN-based servers, and the mainframe into a seamless and powerful information enterprise. Sybase's Enterprise CONNECT has enabled us to do just that."*

— Bob Thompson, Supervisor of Database Administration at Towers Perrin, an international management consulting firm.

*"Sybase enables us to offer a new standard of client applications which leverage our existing mainframe databases. Our clients are experiencing dramatic increases in user productivity along with reduced application development time on our part."*

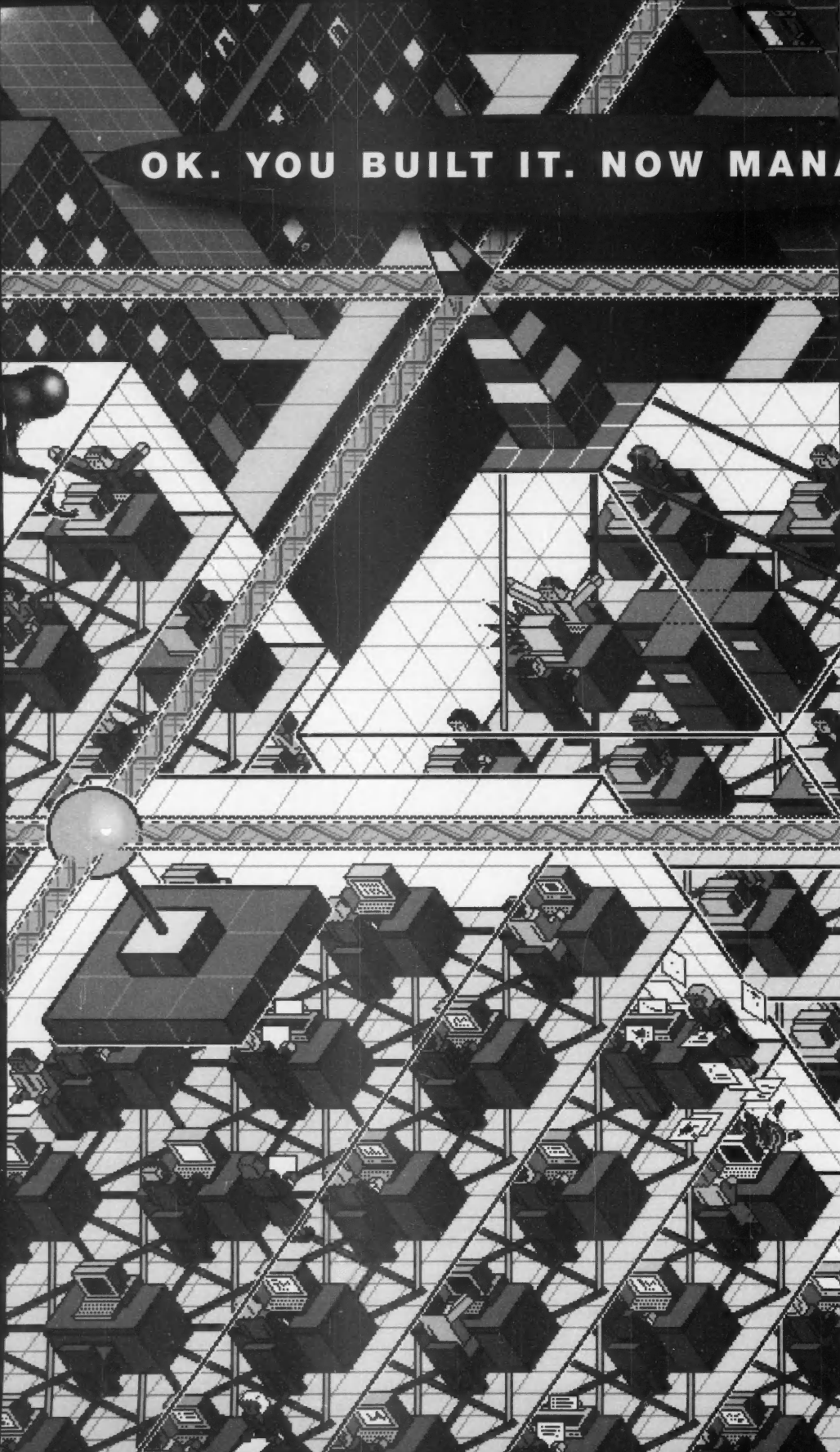
— Ken Carbullido, Director Open Data Streams at First Data Resources, the world's largest third-party processor of credit and debit card transactions.

To get a free copy of our new brochure, "Client/Server Solutions for the Mainframe," call 1-800-SYBASE-1, ext. 6610.



**SYBASE**

THE ENTERPRISE CLIENT / SERVER COMPANY



**OK. YOU BUILT IT. NOW MANAGE IT.**

**F**ace it. Managing a distributed network can be more than you bargained for. Fortunately, there's a powerful, enterprise-wide solution to do the job. PNMS Client/Server.

PNMS gives you important tools for problem, change, inventory and financial management. Because help desk and trouble ticket systems that only manage network problems simply aren't enough.

No other system does more. PNMS spans multiple hardware platforms and network protocols. And unlike one-size-fits-all software, the modular design of PNMS Client/Server makes it easy to tailor to your requirements.

PNMS gives you a robust, scalable solution that integrates with your other network management software, so you get all the critical data you need, in real time.

See how the flexible, integrated PNMS solution can help you manage your distributed network.

Call Peregrine Systems today for a free PNMS Client/Server demo tape.



*Call for a free demonstration tape.*

**Peregrine**  
SYSTEMS

800-960-9991

1959 Palomar Oaks Way  
Carlsbad, CA 92009  
Phone (619) 431-2400  
Fax (619) 431-0696





# Fill it out. Fax it in.

## 51 issues for only \$48. ~~Now Only \$39.95~~

**FAX NO. 614-382-1058**

Yes, I want to receive my own copy of COMPUTERWORLD each week. I accept your offer of \$39.95\* per year - a savings of \$8.00 off the basic subscription price. Plus, I'll also receive the new '94-'95 COMPUTERWORLD Salary Survey FREE just for trying COMPUTERWORLD.

P/Code 98

First Name \_\_\_\_\_ MI \_\_\_\_\_ Last Name \_\_\_\_\_  
 Title \_\_\_\_\_ Company \_\_\_\_\_  
 Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Basic Rate: \$48 per year  
 \* U.S. Only. Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295. Foreign orders must be prepaid in U.S. dollars.

Please complete the questions below to qualify for this special rate.

### 1. BUSINESS/INDUSTRY (Circle one)

- 10. Manufacturer (other than computer)
- 20. Finance/Insurance/Real Estate
- 30. Medical/Law/Education
- 40. Wholesale/Retail/Trade
- 50. Business Service (except DP)
- 60. Government - State/Federal/Local
- 65. Communications Systems/Public Utilities/Transportation
- 70. Mining/Construction/Petroleum/Refining/Agric.
- 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
- 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
- 90. Computer/Peripheral Dealer/Dist./Retailer
- 95. Other \_\_\_\_\_

(Please Specify)

### 2. TITLE/FUNCTION (Circle one)

- IS/MIS/DP MANAGEMENT
- 19. Chief Information Officer/Vice President/ Asst. VP
- IS/MIS/DP Management
- 21. Dir./Mgr. MIS Services, Information Center
- 22. Dir./Mgr. Network Sys., Data/Telc. Comm., LAN Mgr./PC Mgr., Tech Planning, Admin. Services
- 23. Dir./Mgr. Sys. Development, Sys. Architecture
- 31. Programming Management, Software Developers
- 41. Engineering, Scientific, R&D, Tech. Management
- 60. Sys. Integrators/VARs/Consulting Management
- CORPORATE MANAGEMENT
- 11. President, Owner/Partner, General Manager
- 12. Vice President, Asst. VP
- 13. Treasurer, Controller, Financial Officer

### DEPARTMENTAL MANAGEMENT

- 51. Sales & Mktg. Management
- 70. Medical, Legal, Accounting Management
- OTHER PROFESSIONAL MANAGEMENT
- 80. Information Centers/Libraries, Educators, Journalists, Students
- 90. Other Titled Personnel

### 3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)

#### Operating Systems

- (a) Solaris
- (b) Netware
- (c) OS/2
- (d) Unix
- (e) Mac OS
- (f) Windows NT
- (g) Windows
- (h) NeXTstep

#### App. Development Products

- Networking Products

- ☐ Yes ☐ No
- ☐ Yes ☐ No

## COMPUTERWORLD

E4450-7



# Fill it out. Fax it in.

## 51 issues for only \$48. ~~Now Only \$39.95~~

**FAX NO. 614-382-1058**

Yes, I want to receive my own copy of COMPUTERWORLD each week. I accept your offer of \$39.95\* per year - a savings of \$8.00 off the basic subscription price. Plus, I'll also receive the new '94-'95 COMPUTERWORLD Salary Survey FREE just for trying COMPUTERWORLD.

P/Code 98

First Name \_\_\_\_\_ MI \_\_\_\_\_ Last Name \_\_\_\_\_  
 Title \_\_\_\_\_ Company \_\_\_\_\_  
 Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Basic Rate: \$48 per year  
 \* U.S. Only. Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295. Foreign orders must be prepaid in U.S. dollars.

Please complete the questions below to qualify for this special rate.

### 1. BUSINESS/INDUSTRY (Circle one)

- 10. Manufacturer (other than computer)
- 20. Finance/Insurance/Real Estate
- 30. Medical/Law/Education
- 40. Wholesale/Retail/Trade
- 50. Business Service (except DP)
- 60. Government - State/Federal/Local
- 65. Communications Systems/Public Utilities/Transportation
- 70. Mining/Construction/Petroleum/Refining/Agric.
- 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
- 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
- 90. Computer/Peripheral Dealer/Dist./Retailer
- 95. Other \_\_\_\_\_

(Please Specify)

### 2. TITLE/FUNCTION (Circle one)

- IS/MIS/DP MANAGEMENT
- 19. Chief Information Officer/Vice President/ Asst. VP
- IS/MIS/DP Management
- 21. Dir./Mgr. MIS Services, Information Center
- 22. Dir./Mgr. Network Sys., Data/Telc. Comm., LAN Mgr./PC Mgr., Tech Planning, Admin. Services
- 23. Dir./Mgr. Sys. Development, Sys. Architecture
- 31. Programming Management, Software Developers
- 41. Engineering, Scientific, R&D, Tech. Management
- 60. Sys. Integrators/VARs/Consulting Management
- CORPORATE MANAGEMENT
- 11. President, Owner/Partner, General Manager
- 12. Vice President, Asst. VP
- 13. Treasurer, Controller, Financial Officer

### DEPARTMENTAL MANAGEMENT

- 51. Sales & Mktg. Management
- 70. Medical, Legal, Accounting Management
- OTHER PROFESSIONAL MANAGEMENT
- 80. Information Centers/Libraries, Educators, Journalists, Students
- 90. Other Titled Personnel

### 3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)

#### Operating Systems

- (a) Solaris
- (b) Netware
- (c) OS/2
- (d) Unix
- (e) Mac OS
- (f) Windows NT
- (g) Windows
- (h) NeXTstep

#### App. Development Products

- Networking Products

- ☐ Yes ☐ No
- ☐ Yes ☐ No

## COMPUTERWORLD

E4450-7





NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES



**BUSINESS REPLY MAIL**

FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

**COMPUTERWORLD**

P O BOX 2044  
MARION OHIO 43306-2144



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES



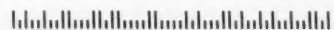
**BUSINESS REPLY MAIL**

FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

**COMPUTERWORLD**

P O BOX 2044  
MARION OHIO 43306-2144



# Computer Industry

## Briefs

### Cisco makes ATM deal

In a \$123 million deal, Cisco Systems, Inc. last week acquired enterprise-class Asynchronous Transfer Mode switching technology and assets from LightStream Corp. in Billerica, Mass. Upon final approval, LightStream's current-generation product, the LightStream 2000, will be sold immediately through Cisco channels.

### Parallan merges

Former superserver vendor Parallan Computer, Inc. has merged with Meridian Data, Inc., a manufacturer of network CD-ROM products in Scotts Valley, Calif. Meridian, acquired for \$19 million, will become a fully owned subsidiary of Parallan. The combined company will offer products under the Meridian name.

### TI settles Cyrix suit

Chip maker Cyrix Corp. in Richardson, Texas, last week said it has settled a December 1993 lawsuit against Texas Instruments, Inc. over a 1991 contract dispute. Under the settlement, TI will pay Cyrix \$15 million for past royalty obligations and a fully paid, royalty-free license for the Cyrix 486SLC/DLC product line.

**SHORT TAKES** Evans & Sutherland Computer Corp. has named James Oyler, 48, to the office of president and chief executive officer. . . . **Unify Corp.** in Sacramento, Calif., tapped Reza Mikaili, 43, as CEO. He is a veteran of Informix Software, Inc. and Ingres Corp. . . . **MicroAge, Inc.** has reported revenue of \$2.2 billion for its fiscal year ended Oct. 30, a 47% increase over 1993. Net income for the same period rose 56% from last year, to \$16.3 million. . . . **Attachmate Corp.** and **Digital Communications Associates, Inc.** have cleared the required Antitrust Improvement Act waiting period, so their merger could take place by year's end.

## Intel should ride out chip storm

By Jaikumar Vijayan

**■ Although the uproar over the floating-point flaw in Intel Corp.'s Pentium chip shows few signs of blowing over, analysts say they doubt much long-term damage has been done to the company or the controversial microprocessor.**

Yet the black eye Intel received in the ordeal could dramatically improve its vision of the marketplace, observers said.

"Intel learned that they are now a consumer company. Though they see themselves as just a chip vendor, when you spend \$150 million advertising yourself, you become a consumer company," said David Wu, an analyst at Wall Street broker S. G. Warburg & Co. in New York.

In fact, Intel's failure to react like a consumer company may well have precipitated the crisis, analysts said. They point to the fact that while Intel stumbled to explain itself only after the issue had reached near-crisis proportions, several systems vendors were staging little publicity coups of their own.

Vendors such as IBM, Compaq Computer Corp. and Dell Computer Corp., for instance, quickly announced telephone hot lines and special programs to help customers affected by the flaw, generally giving the impression of having things well under control, analysts noted.

Ironically, another reason for the vehement backlash from a segment of Intel's

customers could be the level of expectation created by the advertising campaign for the Pentium chip.

"Intel started off the year by telling the whole world that they would blow the windows off the 486 with Pentium, and everyone was salivating to get a hold of one," said Tony Massimini, an analyst at In-Stat Research, Inc. in Scottsdale, Ariz. So when news of the bug got out, it triggered widespread reaction, he said.

The Internet was particularly effective at spreading the word, first within its own community and then beyond it, analysts said. With Intel trying to underplay the effects of the bug and users anxious to get more technical details about it, the Internet swiftly became a breeding ground for both information and wild speculation.

Even Intel Chief Executive Officer Andrew Grove's public letter over the Internet did little to assuage concerns about the flaw, with users seriously questioning the credibility of the company's explanation.

Commercially, however, the impact is likely to be minimal for Intel and the systems vendors basing their designs on the Pentium processor. While Intel stock slid somewhat in the first days of the controversy, and stock prices of Pentium-pushing companies such as Gateway 2000, Inc. and Dell took a hit, they are unlikely to remain affected for long, analysts agreed.

And despite the initial concern triggered

by news of the flaw and questions about Intel's explanations, vendors said they are optimistic that Pentium sales in this crucial quarter will still be on target. Before the controversy, Intel predicted it would sell between 6 million and 7 million Pentium chips, although analysts pegged the figure a bit lower at 4½ million to 5 million.



Intel CEO Andrew Grove's public letter on the Internet did little to assuage user concerns

The uproar could also prove to be a double-edged sword for Intel's rivals. Some of the anger over Intel's attempt to downplay the flaw could lead to greater scrutiny of emerging Pentium-class chips from companies such as Advanced Micro Devices, Inc. and Cyrix Corp.

By mid-1995, both AMD and Cyrix are scheduled to start volume shipments of their K5 and M1 families of Pentium-class chips.

## Cray Research overhauls management team

By Craig Stedman

The other shoe just dropped at Cray Research, Inc.

After starting a manufacturing overhaul in September to speed turnaround times on its systems, this month Cray announced a far-reaching management reorganization. The changes include the retirement of its chief operating officer and the melding of its commercial market operations into a single business unit.

Cray said the sales forces for its various products will also be combined into a single organization to present a unified face to customers. Meanwhile, corporate marketing will be separated from sales and handled by a new group. It is expected to be run by an outsider to be named later.

Both the manufacturing and

management reorganizations are aimed at getting Cray more in step with today's computer market. Flat demand for its big supercomputers, coupled with increased competition from Unix systems and clustered workstations, forced Cray to abandon its old marketing strategy, "build it and they will come," according to both analysts and company officials.

### Changing of the guard

The management changes should produce a more aggressive company in which engineers no longer call all the shots, said Debra Goldfarb, an analyst at International Data Corp. in Framingham, Mass.

"There has always been tremendous tension in the organization between engineering and marketing, with the technical people having the upper

hand," Goldfarb said. "But this restructuring completely shifts the tables."

Gary Smaby, president of The Smaby Group, Inc. in Minneapolis, agreed that the Dec. 31 retirement of Lester Davis as Cray's COO "will certainly change the cultural skew of the company."

Davis, who will also resign from the board of directors, oversaw the design and manufacturing of each Cray machine since the company was founded in 1972. By contrast, his designated replacement, Robert Ewald, is "more of a corporate manager than a designer himself," Smaby said.

Cray said the departure of Davis was "coincidental" to the other management changes. But a spokesman acknowledged that the company is trying to give marketing more

weight in the organization.

Cray's revenue and profits increased in the first three quarters of 1994, but incoming orders dropped from \$483 million in the same period of 1993 to \$311 million. Goldfarb said 1995 is likely to be "an extremely tough year" for Cray because of fiercer market competition and product transition issues as it introduces a new high-end supercomputer.

As part of the reorganization, Cray formed a new Business Systems Division to spearhead its commercial market development activities. Included in the unit are the company's Sun Microsystems, Inc. SPARC-based superserver operation, a group working on decision-support applications and Savant/Cray Solutions, a recently acquired integrator of data warehouse systems.



YOU DON'T

\$1.3 BILLION

IF YOU'RE

TO STICK

This may be stating the obvious, but sometimes, it's worth stating the obvious. We've observed that the most successful companies out there—companies like Ford, AT&T, General Electric—have one thing in common.

They believe in the future. And they put their money where their belief is.

Year in and year out, these companies are among the top 10 spenders on research and development. And on that same top 10 list, in the number 7 position, you'll find Digital. Our long-standing commitment to R&D (we spend more than Apple, Compaq and Sun combined) has led to the development of one breakthrough after another.

From the world's first 64-bit chip, Alpha, and the industry's fastest workstations and servers, to leading-edge software products such as LinkWorks™, our award-winning groupware application.

From the highest-quality, most standards-compliant version of the UNIX® operating system, DEC OSF/1®, to OpenVMS™, which meets the key standard of openness from X/Open™, the nonprofit open standards consortium, not to mention groundbreaking video servers and other interactive information technologies.

JFN

© 1994 Digital Equipment Corporation. Digital, the DIGITAL logo, OpenVMS and LinkWorks are trademarks of Digital Equipment Corporation. UNIX is a registered trademark in the United States and other countries, licensed exclusively through X/Open Company, Ltd. OSF/1 is a registered trademark of Open Software Foundation, Inc.

SPEND

ON R&D

NOT PLANNING

AROUND.

These technologies are leading the way for everything from video-on-demand and home shopping to interactive education. Our commitment to R&D remains unchanged at Digital. What has changed is our way of going about it. It used to be that the hardest part of R&D here wasn't coming up with the ideas. It was pushing them through the system.

So, we've changed the system. From one of Byzantine complexity, to one of resolute clarity. What exists today at Digital is a system where the scientific and pragmatic go hand in hand. A system in which ideas are born and nurtured not just to promote innovation for innovation's sake, but rather, to help customers in real, meaningful ways.

What it all comes down to is this. Digital was, is and will continue to be one of the biggest proponents of research and development in the country. For one simple reason. We believe that investing in the future is the smartest way to secure your place there.

For more information, please call 1-800-DIGITAL or you can reach us via our Internet address: [moreinfo@digital.com](mailto:moreinfo@digital.com).

digital™

## Wish list

To: Santa Claus  
Fr: Bill Laberis  
Re: Lost Xmas list

This list must have fallen from the briefcase of an IS director at a recent conference, where I found it on the floor. I'm forwarding it to you.

Dear Santa —

For starters, my peers and I would like some respect. While we're trying to create order from chaos, we have renegade user departments rolling their own, and my boss is blaming me for skimpy increases in productivity. So one in four people like me gets fired every year.

The next thing is related to the first: I'd like more integrity and honesty from vendors and less hype. My boss thinks client/server systems are a snap because salespeople did an end run and went right to him. They told him Cobol is a 19th century tool. I told him we have very few 21st century programmer/artisans. He didn't care.

Then I'd like a version of NetWare 4.x, complete with batteries. And please don't deliver a version that will only force me to stand in those endless return lines at Toys R Us.

Could I also have a nice PC with lots of chip-level logic so I can figure out some of these systems software licensing deals? I thought it was hard figuring out how you know where all of us live, but that's child's play compared with sorting out these deals and schemes.

I have thousands of Windows users, and they are all going to want Windows 95 if and when it ships next year. I have very little training money, so could you possibly deliver a version of the software that is virtually self-teaching and totally backward-compatible? No? Well, OK then, how about a weekend with Cindy Crawford now that she's on her own?

You are not the subversive type, I realize, but might you consider infecting all hard drives with an anti-Doom virus? Or maybe have the screen saver pop up every time a programmer logs in to alt.sex.fetish on the Internet? We really need to get some work done around here.

Turnabout is fair play, so how about throwing the consulting companies that so ardently push the nuke-the-existing-IS-operations-re-engineering mantra into a re-engineering tailspin of their own? They'll be so busy cleaning up the mess that they won't have time to bother us.

And finally, I'd like you to bless me with the technical knowledge of Leonardo da Vinci, the business acumen of John D. Rockefeller, the negotiating skills of Henry Kissinger and the people skills of Dr. Ruth. That seems to be what it takes to succeed these days. Barring that, is there anything available up your way?

Sincerely,  
Jim

*Bill Laberis*

Bill Laberis, Editor in Chief  
Internet: blaberis@cw.com



## Tech tools do give us more time

Patricia Seybold made a great point about knowledge workers being both enabled and overwhelmed by their technology environments ["Why isn't information technology giving us more time?" CW, Nov. 14]. But let's not be confused about why we're working as hard as we are. The stress in our lives has to do with economic forces far beyond the scope of software and hardware.

I need to make more money because my taxes are up, my home is no longer appreciating in value, lousy public schools force me to send my kids elsewhere, I have no faith in the Social Security system, etc. Business is also more competitive because technology allows more companies to go after my customers, and it makes it easier for my customers to choose from geographically distant vendors.

Personally, I don't blame my tech tools for the challenges of my work life. As a matter of fact, without them I don't think I'd have any time to eat, sleep, work out or play with the kids.

Lenny Liebmann  
Highlands, N.J.

## DOS is the problem

Another "news" story about a virus infection ["Die Hard 2 virus attacks PC productivity," CW, Oct. 31]. More than 100 PCs crippled in a San Diego LAN. More talk of religious use of virus scanners and general indignation.

Sigh.

Here we have a sophisticated

government network of 500 PCs that doesn't seem to realize the ramifications of using an unprotected system such as DOS. And we have a major industry journal that doesn't report the incident as a failure of DOS.

It's time we face up to the fact that the 640K limit is no longer justification for tolerating DOS. Protected operating systems and file systems have been around for decades; instead of writing virus scanner policies, let's move our infrastructure into the '70s.

Peter Kron  
Seattle

## Not too bright

James Johnson had to go to the far side to come up with an example of a "bright side" of client/server technology ["Client/server pandemonium," CW, Nov. 14]. To use an example of changing from a manual system to a computerized solution and then crediting its success to client/server implementation is stretching the point.

There are any number of off-the-shelf, shrink-wrapped software solutions to perform financial applications and order entry on the legacy system in question. I suspect the company would have spent less money on hardware/software acquisition and training and achieved essentially the same productivity gains had it followed this more traditional route.

James S. DeNatale  
Director, data center research  
The Clipper Group  
Wellesley, Mass.

## Client/server didn't bounce everybody

"The client/server shuffle" [CW, Sept. 26] was for the most part an accurate description of changes in Lincoln National Corp.'s information systems operations.

However, the article said that during the past three years "half the IS staff ... found themselves out the door." While it is true that we have reduced IS staff by half, it is not true that all of those employees found themselves out the door — many found jobs in other areas of the corporation.

Second, and more important, the reductions were not solely due to implementation of client/server technology. While client/server has enabled end users to do many of the things they previously relied on IS for, the reduction of jobs was influenced largely by the sale of a major business unit in 1992.

Bob Maltk  
Senior vice president  
Information services  
Lincoln National Corp.  
Fort Wayne, Ind.



Computerworld welcomes comments from its readers. Letters may be edited and should be addressed to Bill Laberis, Editor in Chief, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.



## COMPUTERWORLD

Editor in Chief  
Bill Laberts

Editor  
Paul Gillin

News Editor  
Maryfran Johnson

Sections Editor  
James Connolly

Assistant News Editor  
Patricia Keefe

Assistant Sections Editor  
Johanna Ambrosio

Technical Editor  
Charles Babcock

Senior Editors  
Craig Stedman, Large Systems

Ed Scannell, PC Software

Michael Fitzgerald  
Mobile Computing

Rosemary Calafeso  
Client/Server Software

William Brandel, PC Software

Laura DiDio, Networking

Mid-Atlantic Bureau  
Thomas Hoffman, User Strategies

(201) 587-0090

Julia King, Management

(212) 532-7599

Washington, D.C., Bureau  
Mitch Betts, Social & Legal Issues

(202) 347-6718

Gary H. Antbes, Government & Security

(202) 643-0134

West Coast Bureau  
Jean S. Bozman, Open Systems

Kim S. Nash, Databases

Steve Moore, Networking

(415) 347-0555

Midwest Bureau  
Ellis Bookler, Networking

(708) 827-4433

Pacific Northwest Bureau  
Stuart J. Johnson, PC Software

(206) 643-7770

Senior Writers  
Mary Brandel, Neal Weinberg

West Coast Bureau  
Mark Halper, Sun/Chit Mohan

(415) 347-0555

Staff Writers  
Stephen P. Klett Jr., Jalkumar Vijayan

New Products Editor  
Tim Ouellette

Research Coordinator  
Stefanie McCann

Features Department  
Senior Editors

Michael L. Sullivan, Training, CW Guide

Joseph Magillita, Corporate Strategies

Lory Zortola, In Depth

Allan E. Alter, Management

Kathleen Gow, In Depth

Associate Editors  
Jodie Maze, Careers and Marketplace

David B. Weldon, Management

Cathleen Duffy, CW Guide

Senior Researcher  
Kevin Burden, Firing Line/Scorecard

Assistant Researcher  
Erin Callaway, Resource Center

Fluegelman Intern  
Renée Barber

Special Projects Editor  
Bruce Rayner

Managing Editor, Special Projects  
Joyce Chuchlan-Ferranti

Senior Research Manager  
Bob Fink

Chief Copy Editor  
Anne McCro

Assistant Chief Copy Editor  
Christina Alcarid, Inquire

Senior Copy Editors  
Kimberlee A. Smith, Jill Zolot

Ellen Fanning

Copy Editors  
Michelle J. Keyo, Jay F. Rizoli

Kimberly Gillard, Michelle Grabson

Design Director  
Tom Monahan

Senior Graphic Designers  
Nancy Koval

Mitchell J. Hayes

Design Assistant  
Janelli Goroese

Graphic Designers  
Stephanie Faucher, Mary Beth Welch

Cartoonist  
Rich Tennant

Office Manager  
Linda Gorgone

Editorial Assistants  
Lorraine Witzell, Connie Brown

Aleksandra Skulte

West Coast Bureau  
Chris Panagan

Computerworld Client/Server Journal  
Alan Alper, Editor

Catherine McCrorey, Managing Editor

Electronic Marketplace Liaison  
Lisa Davidson

Highs and Permissions Manager  
Sharon Bryant

Main Editorial Office  
Box 9171, 375 Cochituate Road

Framingham, Mass. 01701-9171

(608) 879-0700

TDD: (800) 428-8244

MCI Mail: 279-6273

Compuserve: 76537,2413

Subscriptions: (800) 669-1002

## Viewpoint

# The wild, wild East

Ted Lewis

Of Delta Air Lines Flight 60 and into the grimy terminal where the drinking water is more dangerous than the KGB, I shuffled my way through rows of high-tech client/server systems to verify my status as a passenger from Frankfurt. These systems were run by the Russian cast of Frank Herbert's *Dune*, but the operators were supervised by Delta employees who pointed out which buttons to push and demonstrated good old Western customer-is-always-right attitudes. This would make Tom Peters smile, I thought, as the clerk asked me in perfect English how long I was staying in Moscow, what my business was and how much money I had. Blunt but efficient.

My Russian hosts picked me up at the airport and transported me in the lap of Lada luxury to town. Along the way I saw a black Mercedes limo pull up and four New Russians in Nike sweats and Reeboks step out to do business with roadside entrepreneurs. Protection business, according to my hosts, who merely smiled. Do you want to pay taxes or get your money's worth from the mob? Do business with Yeltsin, and it's money down the drain. Do business with what people just *know* are ex-KGBers, and you make the right connections.

You want a good deal on a computer? A network? A link to the Internet? Guess who the capitalists are in the former Soviet Union?

Russia is the land of socialists-turned-capi-

talists, yet-to-be-made J. P. Morgans and paper-and-pencil legacy systems. What a gold mine for IS! No IBM/Cobol glass house, no multivendor networks and no installed base of Notes users to worry about.

Just think: Your time machine lands in 1930 stuffed with 1990s technology. Your mission is to bring industry into the 21st century before it gets buried in radical reform. Your labor force is exceptionally well educated and cheap.

You don't have to roll out an ancient IBM or Digital legacy system before you roll in that nifty Microsoft Windows NT server because there is no IBM, Digital, Unisys, Sun or Apple. No installed base, but you can buy almost any computer you want. No hierarchy of bureaucrats to answer to. Just you and the mob.

A good IS shop could clean up. No need to waste valuable resources converting from Novell to TCP/IP to Banyan's Vines, Novell's CC:Mail, Microsoft's Exchange, Apple's PowerTalk and X.500. They don't exist yet. No need

to buy 10 middleware pieces to solve the puzzle of getting data from warehouse to desktop. No need to argue the merits of DOS, Windows, Macintosh, OS/2 Presentation Manager or Motif. As the czar of Russia, Inc., you can select the best and the latest hardware and software. It will plug and play and slice and dice because

you control all the business processes, interfaces, standards, vendors and decisions.

Maybe the Russians have something we don't: less regulation, less bureaucracy, less installed base, less legacy with which to deal. Perhaps, but my guess is that the land of St. George the dragon slayer will have to slay the legacy dragon just like

the rest of us in 10 years. I have seen a whole new generation of legacy systems under construction. It was kind of exciting.

Lewis is chairman of computer science at the Naval Postgraduate School in Monterey, Calif., and editor in chief of *Computer* magazine.



*You don't have to roll out an ancient IBM or Digital legacy system before you roll in that nifty Windows*

*NT server because there is no IBM, Digital, Unisys, Sun or Apple.*

# The real value of client/server

Max D. Hopper

Recently in this column ["Fashions in technology: Are your IS solutions PC?" CW, Aug. 1], I took issue with those who promulgate the notion that the networked small systems and distributed architectures known as client/server will soon replace mainframe-based systems.

Centralized processing and mainframe-level capacities are so intrinsic to the nature of many core business systems that no total replacement scenario is likely to be cost-effective or functionally capable.

Those who deify small systems and damn existing systems have framed their views in terms of such specious questions as, "Are your systems mainframe-centric or PC-centric?" I would suggest that the appropriate view should be network-centric. This architectural approach draws upon the entire spectrum of technologies, using each where it makes the most sense and allowing them to work together.

Viewed from this perspective, the greatest

immediate strengths of small systems are complementary ones. They offer capabilities and benefits beyond what our existing systems deliver. In fact, many companies use the nimble new client/server technologies to breathe new life into their systems. By applying client/server tools, we can break our core business systems out of the glass house and extend them into the workplace with application-specific interfaces that reduce training time and invite broader access.

*It will be a world not just of multiple clients per server but multiple servers per client.*



The immediate value of small, networked tools lies in their ability to integrate information technology with the way people work. Systems should accept input from a variety of devices, thus allowing users to capture data where it

is generated or request information via tools that are consistent with their skill sets and individual needs. Likewise, system output should not be data but answers — more pertinent, personalized and timely information presented in a variety of forms, each appropriate to the information context and relevant to the frame of reference to maximize productivity.

Small system technologies allow us to approach these ideals. Compared with previous approaches, they enable us to provide more intuitive solutions and meet users more on human terms instead of forcing them to emulate machines. The system interface activity becomes a seamless part of the work process, end to end, as opposed to a handoff or interruption in the workflow.

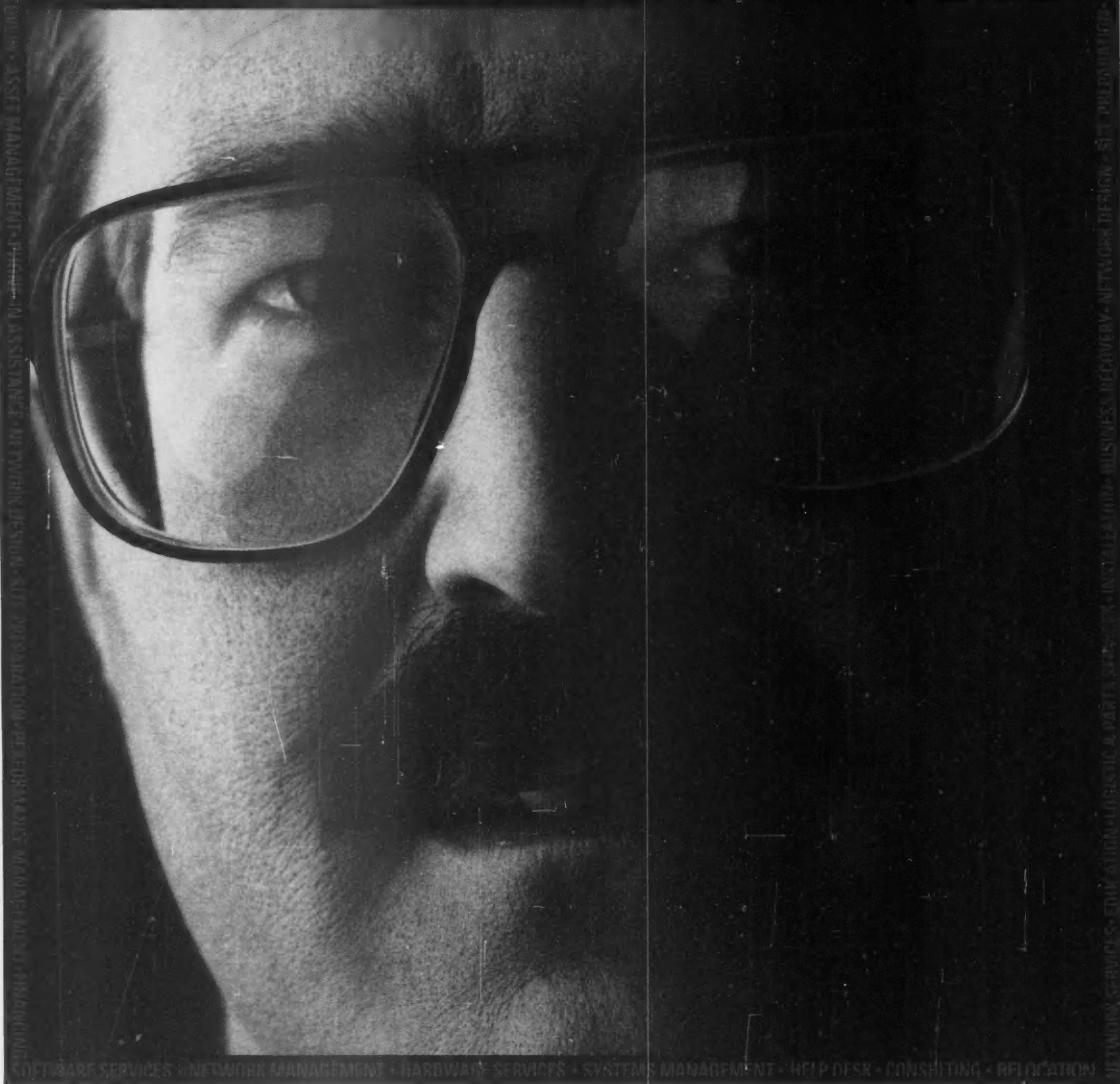
The corporate network environment that embodies these attributes will typically involve multiple computing devices working together. It will be a world not just of multiple clients per server but multiple servers per client.

As technology costs decline, another aspect of these myriad network links will be multiple clients per user — a diverse array of stationary and mobile devices tailored to both business and individual needs for ubiquitous access to system resources. The servers will encompass processing platforms of every scale as the needs of the specific business dictate. And business imperatives alone will dictate whether any given data set is dispersed, distributed or centralized. In short, while client/server approaches are not the new paradigm of enterprise computing, per se, they will play an instrumental role in any IS strategy that hopes to achieve maximum business advantage.

Hopper is chairman of AMR Corp.'s The Sabre Group.

GARY WAKEFIELD DOESN'T CARE IF YOUR SYSTEM IS MADE UP OF  
HP, IBM, MICROSOFT, NOVELL OR WHATEVER.

HE WILL MAKE IT WORK.



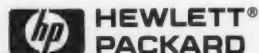
Gary Wakefield - Program Manager, Support Services

He's one of over 17,500 HP service specialists worldwide. And no matter what hardware, software or network your system consists of, Gary and his team are there to take care of it.

Whatever services you need, you'll find that HP Service and Support

has little to do with our hardware. And everything to do with your system.

HP works on your side.



## Windows 95: Pains bring gains

System deemed functional, clean, potent

By Garrett N. Ray

Good-bye program manager. Sayonara Program Information File (PIF) editor. Adios DOS. Hello Windows 95.

To call Microsoft Corp.'s nascent replacement of Windows 3.1 a mere upgrade is to believe that similar names imply similar products. In fact, a test of the M7 beta version of Windows 95 shows that it shares little with the current Windows other than its name, application compatibility and general operating characteristics. The finished product is scheduled to be released in the first half of next year.

A from-the-ground-up overhaul of the decade-old combination of MS-DOS and Windows, Windows 95 is a clean, functional and potent operating system for desktop (and laptop) systems.

Windows 95 is the realization of a goal that Microsoft officials have been discussing for at least five years: the total abolishment of DOS. It is a sensible and long-needed banishment because DOS has saddled Windows with the evils of eight-character file names, terminate-and-stay resident device drivers, incompetent multitasking

and other inefficiencies stemming from its circa-1983 heritage.

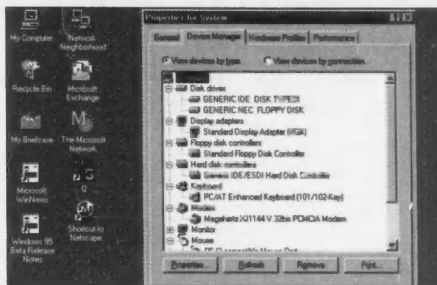
But no more. First, DOS is no longer a separate component of the operating system. It remains as a Windows 95 facility that can run DOS programs, drivers, the DOS shell and the DOS command line, but it is no longer the architectural foundation of Windows.

AUTOEXEC.BAT and CONFIG.SYS, while they can be used to maintain compatibility, are no longer necessary to make Windows work. Also important is that with the widespread and almost obligatory use of Intel Corp. 80386 and 486 processors on the desktop, Microsoft

designed a Windows that makes extensive use of the Intel 386/486 and Pentium "protected mode" to improve a wide array of multitasking and device-management functions.

Windows 95 won't work at all on those old 80286 boxes, by the way, so consider making your tax-deductible equipment donations by next summer.

Where does protected mode help? Take network management. For years, information systems personnel have navigated between the Scylla of network driv-



Microsoft's Windows 95 presents a generic Start button as the point of entry to a hierarchical menu of applications

**Windows 95 is the realization of a goal that Microsoft officials have been discussing for at least five years: the total abolishment of DOS. It is a sensible and long-needed banishment because DOS has limited Windows in many respects.**

ers and the Charybdis of limited PC memory. Add a new network protocol to the organization, such as TCP/IP, and crash into the 640K barrier of the old "conventional memory" space.

The more drivers you add to your systems, the less conventional memory is available to application programs. It's ludicrous but true that both network and organizational flexibility have been greatly constrained by the 640K conventional memory space invented for the 8086 microprocessor more than a decade ago.

Windows 95, because it implements network, storage and other device drivers as 32-bit "virtual" code, finally unshackles IS from the 640K limitation. Install all the protocols you need. They'll work just fine. (And many, including IPX/SPX and TCP/IP, are included

with Windows 95.)

The DOS/Windows combination also has forced on users a form of pseudo-multitasking that has been properly exorcised from Windows 95.

Support nightmares will be greatly reduced with the threaded, pre-emptive multitasking architecture of Windows 95. Rather than seize monolithic control of the entire PC, threaded applications can spawn smaller and more manageable tasks to the operating system, which in turn can decide which threads need immediate attention. In the long run, all resident applications should get the attention they deserve under Windows 95.

### Visible changes

That's the theory behind Windows 95, and in our testing of beta version M7, it seems to work quite well. But what about tangible enhancements?

Experienced Windows users will note an immediate and dramatic difference in the appearance, operation and usability of Windows 95 compared with Windows 3.1.

The mass of folders, icons and sometimes-baffling Windows facilities that users tried to surmount with a variety of add-on desktop management programs have been rethought and revamped. Rather than a cluttered desktop, Windows

Windows 95, page 44

## OF COURSE WE WON IN THIS COMPETITION.

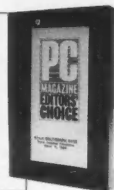
## WE INVENTED THE RULES.



Within months of coming to America, the Nokia 449E 15" monitor was named a PC Magazine Editors' Choice. Which didn't come as

a surprise. After all, many of the criteria by which the contestants were judged are standards Nokia established years ago.

1985: World's first flicker-free overscan monitor.  
1989: World's first digital monitor.  
1990: World's first low-radiation [MPR II] monitor.  
1991: World's first extremely low radiation (TCO) monitor.  
1993: World's first powersaving (TCO '92) monitor.  
1993: World's first on-screen adjustments.  
1994: Nokia Multigraph™ 449E March 15 Editors' choice.



Recognizing this, the judges declared that Nokia "has paid more attention to detail than most companies." But Nokia has always strived to deliver more than is necessary. That is our first rule, and

one we will never change. Call 1.800.BY NOKIA for the name of the dealer nearest you.



©1994, Nokia Display Products, Inc. Multigraph, MicroEmission and FullScreen are trademarks of Nokia Display Products, Inc. Reduces eyestrain when used with an appropriate graphics card. TCO is The Swedish Confederation of Professional Employees. Prices and specifications subject to change without notice. All other trademarks are the sole property of their respective companies. The Energy Star emblem does not represent EPA endorsement of any product or service. Manufactured and designed in Finland in an ISO 9001 approved environment. E-Mail: bynokia@aol.com.

**NOKIA**  
CONNECTING PEOPLE



# mother

ALWAYS **KNEW YOU WERE  
A GENIUS**



**PROVE HER RIGHT. Call 1-800-829-4143 now for your free Windows World Open Entry Kit.**

Blow the judges away with your Microsoft® Windows™ custom application. Display your ingenuity for creating an application that's streamlining the way your corporation or organization does business. Get showered with recognition from your peers. Participate in an awards ceremony featuring Bill Gates and other industry luminaries. Then call home and tell mom thanks for keeping the faith. Find out more by calling for your free Entry Kit today.

**But hurry, the entry deadline is January 23, 1995.**



**COMPUTERWORLD**

**Microsoft**



**COGNOS**

**WALL**

**FORTUNE**

**healthcare**

**REAL ESTATE TODAY  
REALTOR NEWS**

Windows World Open is held at WINDOWS WORLD in Atlanta, April 24-27, 1995.

The Windows World Open Entry Kit contains all details and rules for this contest. Contest is void where prohibited by law. No purchase necessary. Computerworld, Inc. is an IDG Company. Windows, Windows World and the Windows logo are trademarks of Microsoft Corporation. Windows World and the Windows logo are used by INTERFACE GROUP - NEVADA, Inc. under license from Microsoft. All other trademarks are the property of their respective owners.

# Apple's System 7.5 trumpeted for ease of use

QuickDraw GX and PowerTalk viewed as downsides of operating system

By Mark Halper

Early reaction to Apple Computer, Inc.'s System 7.5 operating system has been decidedly mixed.

Users have been disappointed in 7.5's ballyhooed QuickDraw GX graphics and PowerTalk communications features but said the 3-month-old update to System 7.1 has held true to Apple's hallmark of making computers easier to use.

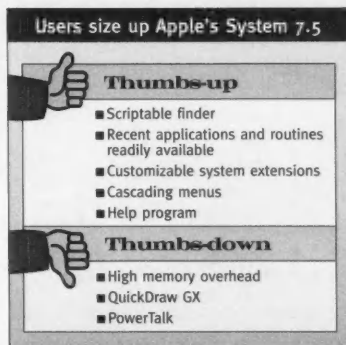
Built-in utilities, search mechanisms, cascading menus and an enhanced help program have significantly reduced the time spent searching drives and directories and installing programs, users said.

"They've automated a lot of tasks that you do and made it easier for you to figure out how to do them," said Bob Duffy, MIS manager at Palo Alto, Calif.-based Cornish & Carey Residential Real Estate. "I don't have to go into my hard drive anymore because the things I always use or used recently are in my menu. They've made it easy for me to get to where I want to go."

Among the features users praised were 7.5's "recent documents," "recent applications" and "recent servers," which let users call up recently used programs and routines without burrowing into directories and subdirectories.

## Less typing, more options

Along the same lines, 7.5's tumbling menu menus give users more task options with fewer keystrokes and less human recall of file names and routines. Users also said they benefited from 7.5's "scriptable



finder," which allows them to automate systems and software tasks.

"It's really handy — the way you don't have to remember anything — because I invariably forget," noted Roger Bundy, director of computing services at Irvine, Calif.-based Taco Bell Corp. Taco Bell is running 7.5 on about 30 of its 600 Macintoshes. Most of the 30 are Power Macintoshes purchased with 7.5 already installed, Bundy said.

The resounding hurrahs were offset by an equally loud Bronx cheer. "Generally speaking, 7.5 has been no problem whatsoever as long as you stay away from QuickDraw GX and PowerTalk," Bundy said. "Both are memory hogs, and there's not a lot of applications that go with them." Many 7.5 users have chosen not to install QuickDraw GX or PowerTalk.

QuickDraw GX marks a technology

leap over the earlier QuickDraw by permitting real-time on-screen color mixing and letter-by-letter ligature and font adjustment. It also gives greater flexibility in printer selection. PowerTalk enables users to receive electronic mail, bulletin board messages, faxes, voice mail and other communication from a single location.

## Memory burdens

But users noted that QuickDraw GX and PowerTalk suffer from high overhead — Apple recommends 16M bytes of memory for systems loaded with the features

[CW, July 18] — and a dearth of applications that take advantage of the features.

System 7.5 product manager Andy Hammond noted that Apple is developing lower-memory versions of the technologies but declined to say when they will become available.

PowerTalk product manager Vince Hunt disputed user claims that PowerTalk does not have adequate third-party support, noting that it ties into messaging products from Microsoft Corp. and WordPerfect, the Novell, Inc. Applications Group, as well as the CompuServe bulletin board. It does, however, still lack a gateway for Lotus Development Corp.'s CC-Mail, he noted.

QuickDraw GX users have also reported that the feature often fails to work correctly because of incompatibilities between its drivers and previously

installed printer drivers.

"They all have to be in synch with one another, and I'm not sure they are," said Duffy, who added that he recently lost page settings during an envelope printing exercise with QuickDraw GX. "If I can't get it to work, I'm not going to ask our [real estate] agents to use it."

QuickDraw GX product manager Ron Fernandez said users can switch out of it on an application-by-application basis. While only a few third-party vendors exploit QuickDraw GX, support will burgeon in the next six months, he claimed, noting that the feature will enable even low-end applications to run sophisticated colors and fonts.

"We're still not recommending 7.5 internally," said Phillip Corchary, network systems analyst at US West Marketing Resources Group in Omaha, a US West, Inc. subsidiary. "PowerTalk doesn't buy us anything because the major messaging vendors aren't doing anything with it. And QuickDraw is somewhat problematic in a complex graphic environment."

Corchary and other users such as Valerie Takumoto, a technical staff member at The Aerospace Corp. in El Segundo, Calif., noted that even without QuickDraw GX and PowerTalk, System 7.5 is memory-demanding.

Takumoto said a trim version of 7.5 she loaded on an Apple IICx uses 3.7M bytes of memory. "That's about a megabyte above System 7," she said.

Duffy said the silver lining to the memory requirements is that System 7.5 permits users to turn system extension features on and off for a given session, which spares memory.

Comdex/Fall '94

## Lost in the commotion: Product debuts that users may have missed

By Stuart J. Johnston

In the constant din of vendors hawking their wares and the 190,000 or so attendees shuffling from booth to booth at Comdex/Fall '94 last month, several smaller but notable systems announcements nearly got lost in the shuffle.

IBM showed off its OS/2 for PowerPC, formerly known as the WorkPlace OS for PowerPC with an OS/2 "personality." The company plans to release the first beta this month and a second beta in the first quarter of next year. Final shipment will be completed by "midyear," said Wally Casey, director of marketing at IBM's Personal Software Products division.

Taligent, Inc. announced a new name for its Taligent Applications Environment, formerly called TalAE. The set of extensible object-oriented application frameworks is now called CommonPoint, said Joe Guglielmi, Taligent's chairman and chief executive officer.

At the same time, Taligent announced a certification and branding program for applications developed using CommonPoint. Pro-

PC operating system shipments				
	1993	1994*	1995*	1996*
Windows**	24.4M	35.1M	43.3M	53.4M
Windows NT	286,000	330,000	450,000	675,000
DOS	16M	8.4M	5M	660,000
Macintosh	3.7M	4.1M	5M	6M
OS/2	984,000	1.1M	1.2M	1.4M
Unix	824,000	905,000	996,000	1.1M

\*Projected \*\*Includes all upgrades and Windows 95  
Source: PaineWebber, Inc., New York, and corporate reports

grams that pass a comprehensive verification suite test will be allowed to use the logo.

Taligent also presented target delivery dates for CommonPoint. "We expect to ship beta [code] to the investors by the end of this year and the final code in the first quarter" of next year, Guglielmi said. Version 1.0 of CommonPoint is scheduled for release on operating systems from the investors — IBM, Apple Computer, Inc. and Hewlett-Packard Co. — in the third quarter of next year, he added. Those operating

systems will include IBM's OS/2 and AIX, Apple's Mac OS and HP's HP/UX.

Meanwhile, Taligent's own operating system, called TalOS, "is currently staged for early 1996 [with] the beta in late 1995," Guglielmi said. It will use the same microkernel as IBM's WorkPlace OS. Two other Taligent products, TalDE (Development Environment) and TalUI Builder (User Interface Builder), will go into beta testing "around the beginning of the second quarter," he added.

Microsoft Corp. will begin a third beta release of Windows 95, also referred to as the Preview program, early next year that will go out to as many as 300,000 to 400,000 users, said Brad Silverberg, vice president of the Personal Systems division. The second beta began last month and went

out to 30,000 to 40,000 users. Users can purchase Beta 3 for "around \$30, which is the cost of goods," or the cost to manufacture and ship the beta, one Microsoft official said. The fee will not be applied toward purchase of the final version of Windows 95 when it ships in the first half of 1995, and the Beta 3 code may include a software timer to disable the system when it reaches an expiration date. Street price for Windows 95 will be "under \$100," Silverberg said.

## Millions sold

IBM has shipped more than 7 million units of OS/2 2.x and OS/2 Warp, said Lee Reiswig, president of the Personal Software Products division.

**THIS ONE SAYS  
YOU'RE A VISIONARY.**



Dell's OptiPlex System  
\$1800

**THIS ONE SAYS  
YOU'RE NEARSIGHTED.**



The Other Guy's System  
\$2000



\* If you encounter a compatibility problem within three years after the original purchase, we guarantee that Dell's engineers and technicians will work with you to identify the cause and recommend a solution. For a complete copy of our limited compatibility guarantee, contact Dell at 800-933-4177, to run on compatible ISA or EISA systems of the same vintage. † For a copy of our Limited Warranty, please write to Dell Computer Corporation, 2214 W. Braker Lane, Bldg. 3, Austin, TX 78758. \* Prices valid in the U.S. only. Some products and promotions may not be available outside Pentium Processor logos, and Pentium are trademarks of Intel Corporation. Dell disclaims proprietary interest in the marks and names of others. ©1994 Dell Computer Corporation. All rights reserved.





With so many changes on today's technology horizon, seeing the forest for the trees can be quite a challenge.

For example, many vendors are still heavily promoting 486 systems that were originally designed for the computing environment of the past.

At Dell, we're making it easy and safe to move to the future offered by Pentium™ processor-based PCs.

Dell® OptiPlex™ Pentium processor-based systems give your organization an upgrade path to the powerful new operating systems and applications that will change the marketplace in the months to come.

For less than the price of a 66MHz 486, the Dell OptiPlex delivers the platform and standards you'll need for 1995 and beyond. Specifically, Plug-n-Play, PCI, leading reliability and guaranteed compatibility.\*

So call us today. Instead of putting a piece of history on your desk, we can bring you the future.

A benefit that's easy to see.

## OPTIPLEX™

DELL OPTIPLEX 560/L  
60MHz PENTIUM™ PROCESSOR

- 8MB RAM/270MB Hard Drive
- VS14 Monitor (14" CRT, .28mm)
- Guaranteed Compatibility\*
- 3-year Warranty†

**\$1799**

Product Code #300247

DELL OPTIPLEX XL 575  
75MHz PENTIUM PROCESSOR

- 8MB RAM/540MB Hard Drive
- VS14 Monitor (14" CRT, .28mm)
- Guaranteed Compatibility\*
- 3-year Warranty†

**\$2279**

Product Code #300275

DELL OPTIPLEX XL 590  
90MHz PENTIUM PROCESSOR

- 16MB RAM/540MB Hard Drive
- VS14 Monitor (14" CRT, .28mm)
- Guaranteed Compatibility\*
- 3-year Warranty†

**\$2845**

Product Code #300293

DELL OPTIPLEX XMT 590  
90MHz PENTIUM PROCESSOR

- 16MB RAM/1GB Hard Drive
- VS15 Monitor (15" CRT, .28mm)
- Mini Tower Chassis
- Guaranteed Compatibility\*
- 3-year Warranty†

**\$3235**

Product Code #300295

# DELL™

**(800) 626-8297**

MONDAY-FRIDAY 7AM-9PM CT • SAT 10AM-6PM CT  
SUNDAY 12PM-5PM CT • CANADA\* CALL 800-387-5755  
KEYCODE #12005 • MEXICO CITY\* CALL 800-228-7811

Guarantee applies to PC hardware only and does not extend to software or devices not intended for the U.S. Prices and specifications subject to change without notice. The Intel Inside and

### Windows 95

CONTINUED FROM PAGE 39

95 presents a generic Start button as the point of entry to a hierarchical menu of applications and documents.

On installation, the menu is automatically created from existing Windows 3.x Program Manager files (although this installation function did not work in our beta-test version).

"Shortcuts" — which appear on the desktop as icons — can easily be added to the main desktop or to any other program folder for single-click access to both documents and applications. Shortcuts can also be embedded in other documents and shared by users through E-mail or networked applications.

IS staff will appreciate the array of enhancements that bolster system administration and support. For example, the klunky PIF schema has been replaced with property sheets, which provide instant and editable configuration data on applications and system resources.

#### Databases without fear

The horrors of multiple .INI files are supplanted with a new Registry database, which tracks user and system information. The Plug and Play feature of Windows 95 — which automatically configures the operating system to use various system hardware — seems to handle many of the arcane configuration issues that are vexing to users and support staff.

The Policy Editor allows custom configuration of individual and groups of machines by systems administrators. Finally, Windows 95 is inherently a Simple

Network Management Protocol client, so remote monitoring and management is possible.

In short, there is much here for system administrators that should radically diminish not just support time but also the frustration and hair pulling of tailoring multiple Windows configurations on dozens or thousands of machines. Centralized and logical system support is one of the big gains that any Windows 95 organization will quickly realize.

Any review of Windows 95 is bound to be a mere snapshot of this revamped operating system. However, there is one critical set of issues that may go overlooked beneath all the new features and functions: Windows 95, while destined to add new functionality and flexibility to users' organizations, will also place a burden on them (and IS staff) to learn an entirely new operating system.

You'll gain a lot by so doing, but don't let anyone say the transition from Win-

dows 3.1 to Windows 95 will be simple, flawless or even cheap. You'll be unshackled from the crude and klutzy legacy of DOS, but you'll have a heck of a lot to learn, a heck of a lot to reorganize and a heck of a lot to rethink about your end-user management functions. Does the adage "no pain, no gain" come to mind? Stock up on coffee and aspirin.

Ray is a systems consultant based in Boston and Washington.

# Only *Infinium*<sup>™</sup> lets you use our OO applications without the need to learn OO programming.

*Infinium*, and our accompanying object library, provides you with an environment to customize and rapidly deploy strategic enterprise-wide applications, especially on the AS/400 Advanced Series. And this is only the beginning. Find out why. Call 800 S2K'S OOT.

**Software 2000**

The Ultimate in OOT for client/server.

### Colonial newspaper to be put on CD-ROM

One small company is bringing history up to date. Accessible Archives in Malvern, Pa., creates fully searchable CD-ROMs from historical documents, allowing historians to take a breather from lengthy searches through archives.

The company is halfway through digitizing the *Pennsylvania Gazette*, an 18th century newspaper that today exists as only eight or 10 closely guarded original sets and perhaps 100 microfilm copies. The CD-ROM includes text as well as images such as advertisements.

The Philadelphia weekly was owned by Ben Franklin for 40 years and was the premier colonial newspaper.

"I think it's a wonderful resource," said Jean Soderlund, professor of history at Lehigh University in Bethlehem, Pa. "There's a wealth of information in there."

Next month, Accessible Archives will release on CD-ROM a cumulative index of *Niles' Register*, a 19th century weekly newspaper that covered national and foreign news, a spokesman said.

—IDG News Service

## Desktop Computing

### New Products

**Micrografx, Inc.** has announced ABC SnapGraphics 2.0, graphics software for Windows.

According to the Richardson, Texas, firm, ABC SnapGraphics 2.0 lets users add diagrams to presentations, reports and other documents and integrates with users' existing software.

The product includes automated features to simplify the creation of organization charts, flowcharts, project timelines and other diagrams. SnapSteps give users step-by-step instructions during the creation process.

ABC SnapGraphics costs \$49.

► **Micrografx**  
(214) 234-1769

**Management Information Technologies, Inc.** has announced ConSearch

3.0 for Windows, information retrieval software.

According to the Commack, N.Y., company, ConSearch 3.0 for Windows reads text directly in most original application formats and recognizes and relates ideas in English, French and German.

The product understands relationships between words and locates and displays specific data for the user, even if the user does not know the exact words or context used in the document.

ConSearch 3.0 for Windows costs \$495.

► **Management Information Technologies**  
(516) 231-1254

**Proportional Software** has announced Compression Plus, compression software for OS/2.

According to the Fort Collins, Colo., firm, Compression Plus lets users control which programs and data files are moved to compressed storage.

The product includes a Virtual Disk-Sampler, a ready-to-use compressed drive filled with OS/2 icons, bit maps, backgrounds and utilities.

Compression Plus costs \$179.

► **Proportional Software**  
(303) 484-2665

**Champion Duplicators, Inc.** has rolled out DiskCopier 2000, a disk duplicator.

According to the Fremont, Calif., company, DiskCopier 2000 formats blank disks, copies the master disk to the blanks and verifies each copied disk.

The product can duplicate as many as 40 disks without operator attendance.

DiskCopier 2000 costs \$1,895.

► **Champion Duplicators**  
(510) 651-1934

**Genicom Corp.** has announced the Genicom 7612 printer.

According to the Chantilly, Va., company, the Genicom 7612 provides 600 dot/in. resolution with high-resolution control enhancement and prints 12 pages per minute. Included are a 150-sheet multi-purpose paper tray and a 500-sheet adjustable paper drawer. Envelopes and legal sheets are handled without additional options. The printer comes with a high-speed bidirectional parallel port and serial port and provides automatic port and emulation switching.

The Genicom 7612 costs \$1,649.

► **Genicom**  
(703) 802-9200

**3M Optical Systems** has announced the PF50, a notebook privacy filter.

According to the Roseville, Minn., company, the PF50 protects confidential information on a notebook from being seen in public places.

The filter, which weighs less than 1 pound, includes an antiglare feature that improves contrast and reduces glare.

The PF50 costs \$119.

► **3M Optical Systems**  
(612) 736-7646

**Wyse Technology, Inc.** has announced WX-15, a serial-connected X terminal.

According to the San Jose, Calif., company, WX-15 features a 14-in. monochrome display and was designed for users of character-based terminals who want to take advantage of the graphic interface capabilities of an X terminal.

In X-compatible mode, the product communicates over a standard serial line with a host containing the serial X server software module. The mode features 800-by-600-pixel resolution.

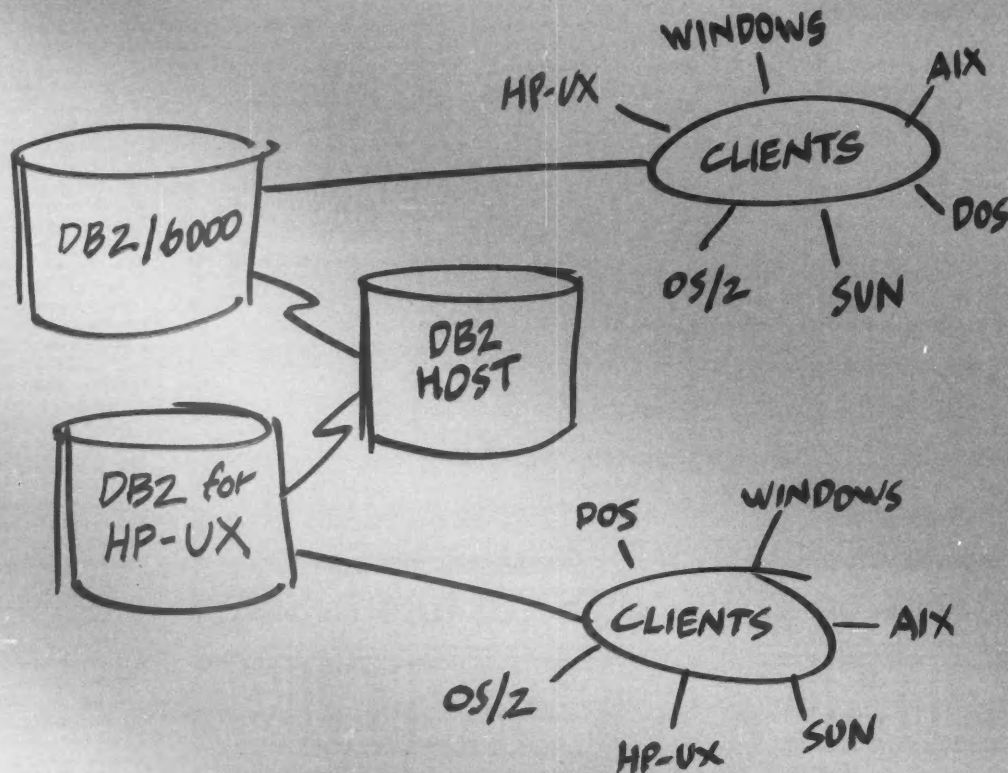
WX-15 costs \$695.

► **Wyse Technology**  
(408) 473-1200

Not just another pretty GUI.

OMG





# DB2 goes UNIX, UNIX, UNIX.

How do you move your data safely between the mainframe and client/server UNIX® environments? No matter what flavor of UNIX you choose, the answer is DB2®.

DB2 for HP-UX™, DB2 for the Solaris® Operating Environment, and DB2 AIX/6000™ provide transparent access to host databases from servers and LAN client applications (including DOS, Windows™ and OS/2®) via DDCS (Distributed Data

Connection Services). Support for the X/Open® XA interface specification for efficient transaction management is built in.

Stored procedures distribute application workloads between clients and servers while referential integrity, multi-level concurrency support, forward recovery and online backup ensure high performance and availability. And each DB2 open solution protects your existing investment by allowing you to manage your corporate data

securely within your client/server environment. Installation and client configuration are easy.

DB2 has never been more open. For more information about these and other DB2 solutions, call 1 800 IBM-3333, ext. STAR 718, or contact your authorized IBM reseller.

SOFTWARE FOR  
CLIENT/SERVER RDBMS

**IBM®**

© 1991 International Business Machines Corporation. All rights reserved. DB2, DB2/6000, DB2 for HP-UX, DB2 for the Solaris Operating Environment, DB2 AIX/6000, and X/Open are trademarks of International Business Machines Corporation. Windows is a trademark of Microsoft Corporation. 1991 IBM Corp.

## Clone makers stray from SPARC

Some look for new technology to broaden markets

By Jean S. Bozman

Sun Microsystems, Inc. casts a mighty long shadow in the SPARC-compatible marketplace. Sun has more than 90% of the market built around its SPARC RISC microprocessor. But analysts say Sun may pay a heavy price for its clear dominance: The loyalty of some of its SPARC clone makers is wavering.

In recent years, lagging SuperSPARC chip performance has slowly eroded the number of vendors participating in the SPARC-compatible marketplace, although the number of workstations and servers shipped has continued to rise.

Clone makers are still selling a wide variety of SPARC units, from portables to desktops to supercomputers. But some, including Integrax, Inc. and Auspex Systems, Inc., have recently announced the substitution of compatible, high-powered HyperSPARC chips from Ross Technologies, Inc., a Fujitsu Ltd. subsidiary.

### Cray holds back

However, Cray Research, Inc.'s supercomputers division will wait for a power boost from Sun's 64-bit UltraSPARC chip next year, said Shahin Khan, marketing

programs manager at the Cray unit in Beaverton, Ore. "We don't go head-to-head with Sun at all," Khan explained. "We start where they leave off." Cray sells high-end SPARC machines with up to 64 SPARC CPUs.

In recent weeks, several clone makers have openly said they are searching for new technology to broaden their market. Adding support for other

chips "is very much a possibility," said Carl Baldini, vice president of engineering at RDI Computer Corp. in Carlsbad, Calif., a maker of portable SPARC-based units. "We are considering those kinds of options."

End users of SPARC-compatible systems may well remain in the Sun market, analysts said, because users' applications run under Sun's SunOS/Solaris 1.x or Solaris 2.x operating systems. There are roughly 9,000 ap-

plications for Solaris, including about 3,000 for Solaris 2.x. For example, the *Houston Chronicle* uses 225 Tatum Science & Technology, Inc. workstations to complement its use of Sun servers for editorial applications.

Cyrix Corp. in Richardson, Texas, uses 100 Tatum SPARC clones to support engineers' computer-aided design applications under SunOS for chip design. "Performance is basically identical, and the price and service are much better," said

Sun, page 51



### Sun branches out

At the Comdex/Fall '94 trade show last month in Las Vegas, Tatum Science & Technology demonstrated a PowerPC-based unit that runs Microsoft Corp.'s Windows NT.

Kam Cham, the Tatum division's president, said he still plans to use faster SPARC chips, including the SuperSPARC II and 64-bit UltraSPARC, both due next year. But a move to Windows NT and the IBM/Motorola PowerPC on some workstations will broad-

en the firm's reach beyond its technical user base and into the commercial market, he said.

Jason Lo, president of Integrax in Newbury Park, Calif., said his firm competes with Sun on performance. Now, the company is looking to new chips to gain more sales, he said. "We have no firm plans at the present time for UltraSPARC," Lo said. "We are seriously studying the opportunity on PowerPC with Windows NT." Integrax will also explore using Sun's Solaris operating system on PowerPC units, he said.

To meet clone makers' growing interest in Windows NT, Sun's SPARC

Technology Business chip division in Sunnyvale, Calif., is building NT support into the 64-bit UltraSPARC chip. Although Sun's Unix software competes head-on with Windows NT, pragmatism drove the decision, said Bill Raduchel, Sun's chief information officer and technology strategist. "We want to be a chip supplier and people in the market want it—not only workstation vendors, but server vendors," he said. But Raduchel, who participates in Sun's strategic planning, said Sun is far from deciding to ship its own NT-compatible systems.

—Jean S. Bozman

## Xcелlenet eases management with RemoteWare 2.0

By Michael Fitzgerald

■ Xcелlenet, Inc.'s upgrade of its RemoteWare product, Version 2.0, should turn heads at corporations that want to better manage their remote users.

Analysts say the Atlanta-based software maker, which combines middleware and distributed application software and calls it "fieldware," currently occupies a unique niche in the software world.

"They don't have any competition that I can think of," said Samuel May, an analyst at The Yankee Group in Boston.

May said RemoteWare effectively operates as a variant of Lotus Development Corp.'s Notes groupware package but for remote users. He said Xcелlenet could be a highly successful company if it figures out how to effectively package and market its product.

"This is not selling Notes to white-collar people sitting in tall buildings in Boston, New York and Los Angeles. This is selling it to people sitting out in Denny's restaurants and Jiffy Lubes," May said.

RemoteWare is targeted at Fortune 1,000 companies. One of Xcелlenet's main goals is to give information systems staffs more flexibility, company officials said.

"We wanted to give the central network administrator more ability to do things," said Sami B. Jajeh, manager of market development at Xcелlenet.

Version 2.0 has drawn interest from outside Xcелlenet's customer base.

"We are looking at [Xcелlenet]," said Dayakar Veerlapati, a research analyst at Union Pacific Technologies in St. Louis. With RemoteWare, a company can set up a predefined call schedule in which a server calls a phone number during the night, "wakes up" an attached notebook and synchronizes files between the two platforms, Veerlapati said. The server then leaves a record for the user to review in the morning. Union Pacific Technologies could also use this facility to update software programs remotely.

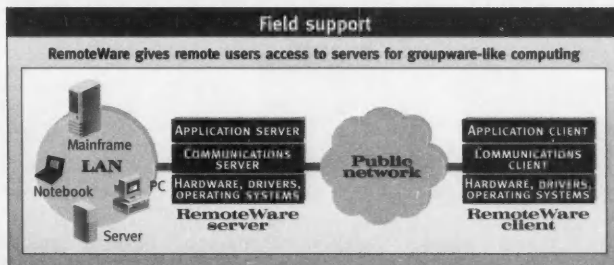
Veerlapati said one obstacle for Xcелlenet at Union Pacific Technologies is that the company already uses Notes, which duplicates some RemoteWare functions.

Different configurations of RemoteWare will be available when the product ships later this month. A base configuration costs \$302 per user for a 100-user site, \$174 per user for a 500-user site and \$131 per user for a 2,000-user site. The highest level costs \$787 per user for 100 users, \$501 per user for 200 users and \$353 per user for 2,000 users.

### It's in there

Xcелlenet has 600 customers with 189,000 users for its RemoteWare product. Version 2.0 is a complete reworking of the IBM OS/2-based server product and includes the following:

- A 32-bit architecture.
- Support for protocols such as NetBIOS, TCP/IP and SPX/TPX.
- Object technology for improved flexibility.
- Support for the Messaging Application Programming Interface and Common Messaging Calls messaging standards.
- Support for Object Database Connectivity-compliant databases and SQL databases.
- Upgraded application development tools.



Users said Version 2.0 addressed many of their wants for RemoteWare.

"With 2.0, they offered me about five things I could use," said Dean T. Thompson, retail systems manager at BP Oil, Inc. in Cleveland. Thompson cited object technology, doubling the number of users per server from 16 to 32, improved security, multiprotocol support and support for X.400.

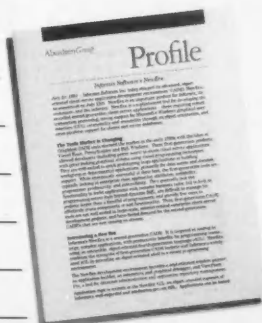
**“NewEra looks like it came  
technology-rich startup.  
has a firm technology base**

**INFORMIX-NewEra.  
For Powerful,  
Next-Generation  
Client/Server  
Applications.**



# Send It To Me.

Name \_\_\_\_\_  
Title \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_  
State/Zip \_\_\_\_\_  
Phone \_\_\_\_\_



Or call 1-800-688-IFMX, ext 38 for more information.

CW 12/12

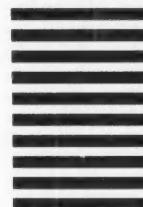


NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

**BUSINESS REPLY MAIL**

FIRST CLASS MAIL PERMIT NO. 2502 SHAWNEE MISSION, KS

POSTAGE WILL BE PAID BY ADDRESSEE

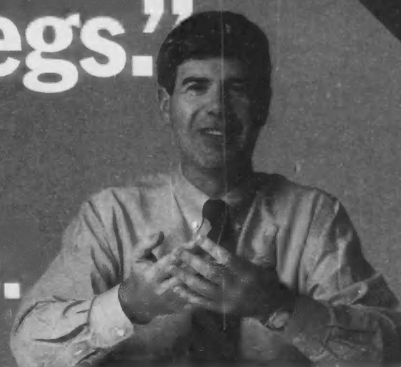


Informix Software, Inc.  
Telemarketing Department  
16011 College Boulevard  
Lenexa, KS 66219-9943



# from an aggressive, We believe the product that will have long legs."

**Peter Kastner**  
**Aberdeen Group, Inc.**



Free Aberdeen Report

Developing graphical client/server applications takes money, time, and energy. You want—you *need*—to make the most of all three.

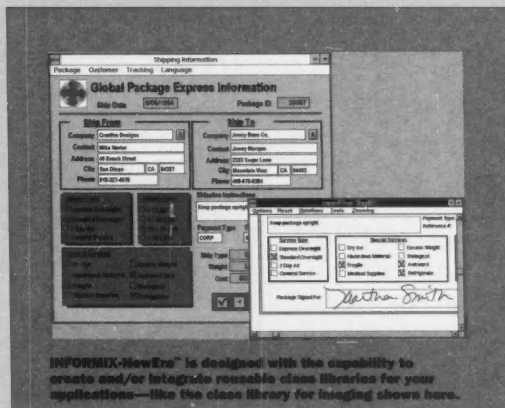
Graphical applications need to move from your development workstations across your entire company, if need be. They might be used by 5 people, or 500, or 5,000. They need to accommodate change, quickly and easily, as your business changes.

So—where do you go? Do you choose and use one of the current crop of graphical development tools? You could. And your applications will probably look great. However... Are they going to have the power you need for enterprisewide client/server solutions?

If you've tried this, you know what we're talking about. First-generation tools don't have brains behind the beauty. The applications you build with them just don't scale. If you want power, if you want performance, you need more. You need a tools *architecture*.

**Judith Murwitz, President, Murwitz Consulting:**

**"INFORMIX-NewEra is exactly the type of client/server development environment developers need to create production-level applications."**



INFORMIX-NewEra™ is designed with the capability to create and/or integrate reusable class libraries for your applications—like the class library for imaging shown here.

That's where INFORMIX-NewEra comes in. All of the graphical tools you expect are there, backed up by an object-oriented development environment. NewEra is the only way to design client/server applications that are mission-critical, enterprise-wide, and graphical.

NewEra's architecture includes visual programming tools, an industrial strength object-oriented language, interactive debugger, compiler, repository, and support for team development on Windows or

UNIX. It's client/server ready, and it will support open connectivity, so you can use NewEra with non-Informix databases, too.

**Find Out What's Behind The Screens.**

We'll send you an independent report on INFORMIX-NewEra from Aberdeen Group. **Send or call toll-free 1-800-688-IFMX, ext. 38 for your free copy.**



# LOTUS BREAKS database TRADITION: being powerful is no longer an excuse for being cryptic, difficult and unfriendly.

## POWER MADE APPROACHABLE

If you've ever tried to create a report in Access, you've no doubt noticed you can't see what you're doing as you're doing it. Approach has a one-of-a-kind technology called PowerClick™ reporting which makes a lot more sense. It not only lets you see what you're creating, it lets you group, organize and produce calculations by simply clicking on graphical SmartIcons.®

Approach also delivers advanced capabilities like dynamic crosstabs and charting. And new programmable macros

let you quickly develop sophisticated applications on the spot.

And Approach features X10™ query architecture which means blazing speed in organizing, analyzing and manipulating your database. As well as the highest-performance connectivity to virtually any database, including Paradox, dBase and Lotus Notes.®

*"The amazing code-free database... it's the database we've all been waiting for."*  
PC/Computing 7/94  
*"Approach Nears Database Ideal"*  
Windows Magazine 8/94  
*"Approach looks like a better choice than Microsoft Access: easier to use, yet still powerful and fast."*  
Infoworld 4/4/94

## IT'S EASY WITH 1-2-3

Approach 3.0 extends the power of Lotus 1-2-3® allowing you to create intelligent forms, PowerClick reports, mailing labels and dynamic crosstabs on your worksheet without ever leaving 1-2-3.

Approach also offers advanced integration with Lotus Notes, the leading groupware application, making it the obvious choice for people who work together in groups.

Approach is one of five integrated applications featured in Lotus SmartSuite.® For a limited time you can get Approach for \$129. Or get the entire SmartSuite upgrade for just \$299.\*\*

Call 1-800-TRADE-UP, ext. A370 today for more information. And ask your reseller about volume purchase options through Lotus Passport.

**Lotus**  
Working Together



## INTRODUCING LOTUS APPROACH 3.0

Until now, a lot of people who would really benefit from a desktop database really couldn't. Well, Lotus® has now done for the relational database what it accomplished for the spreadsheet 10 years ago: Introduced a powerful application for people who think like business people instead of programmers.

## IT'S EASY AS 1-2-3

With the new Approach® 3.0, demanding functions like tracking sales, managing projects, and analyzing and reporting on corporate data are surprisingly simple. In fact, research has shown that typical users are doing productive work with Approach within two hours of opening the box.\*

But make no mistake, just because Approach isn't hard, doesn't mean it's not powerful.

Think of Approach as a car with automatic transmission. It does the same things as other powerful databases; it's just that you don't have to do everything manually.

And that's why PC Magazine awarded Lotus Approach its prestigious Editor's Choice award over both Access® and Paradox.®



## THE NO COMPARISON COMPARISON

### ACCESS & PARADOX

Pay consultant to set up application  
Pay consultant to change application  
Learn to program  
Learn database-terms like "RowSource Control" and "LinkChildFields"  
Learn new concepts like "Primary keys" and "Dynaset"

### APPROACH

Just do it  
Just do it  
No programming  
Use terms like "Find" "Mailing Labels"  
Work with familiar concepts like "Reports" and "Forms"

\$129 special introductory price. \$495 suggested retail price. \$129 special price expires March 31, 1995. \*\*\$299 SmartSuite upgrade promotional price available while supplies last. In Canada call 1-800-60-LOTUS. ©1994 Lotus Development Corporation, 55 Cambridge Parkway, Cambridge, MA 02142. Lotus, Lotus Notes, 1-2-3, Approach, SmartSuite, SmartIcons and Working Together are registered trademarks and PowerClick, X10 and PowerKey are trademarks of Lotus Development Corporation. Access is a registered trademark and Windows is a trademark of Microsoft Corporation. dBase and Paradox are registered trademarks of Borland International Inc. \*MarketProbe International, New York, NY, February, 1993.

# Syntra eases exporter paper chase

Ex-tra automates order processing, tracking for international business

By Gary H. Anthes

Not everyone supported the recent passage of the General Agreement on Tariffs and Trade, but most experts agree GATT will lower tariffs and increase U.S. exports by tens of billions of dollars annually.

While that is good news for exporting companies as a whole, it could be a headache for the accounting people in those companies. Reason: As exports increase, so do the volume and complexity of the paperwork demanded by Uncle Sam.

Syntra Ltd. in New York said its software for managing exports helps tame the paper tiger.

"When tariffs are reduced, governments look for other ways to control exports," said Pano Anthos, co-founder and marketing director at Syntra. "Frankly, documentation is used as a nontariff barrier."

## NAFTA increases paper shuffle

For example, he said, the North American Free Trade Agreement (NAFTA) lowered tariffs on exports to Mexico but greatly increased the paperwork burden on exporters by requiring detailed "country of origin" certificates.

DeKalb Genetics Corp. in De Kalb, Ill., uses Syntra's Ex-tra export management software and will soon upgrade to

the release that handles NAFTA requirements, said Donna Schmid, senior manager of export services. "NAFTA has complicated things because now we have to file export certificates," she said. "It's also been a challenge because we have to use different [codes]. It's another set of numbers and more paperwork."

Ex-tra automates export order processing and tracking, invoicing, shipping documentation, accounts receivable, financial reporting and other functions to

transactions. For example, it automatically translates dollars into the appropriate foreign currency and handles things not often used in domestic commerce, such as letters of credit.

DeKalb has used Ex-tra since 1989. "Before, we had no database so everything had to be typed in," Schmid said. "And it was a big job for me to do sales reports because I had to track each invoice manually."

## Worldwide system

For ABB Power T&D Co. in Stamford, Conn., Ex-tra builds bridges to other in-house systems used by the company's 27 divisions. For example, it takes orders for electrical equipment from customers around the world and sends them by electronic data interchange to the appropriate divisions for manufacture. Once the order is ready to ship, Ex-tra produces invoices, packing lists and other paperwork and feeds data back to ABB's accounts receivable system.

Three years ago, before ABB had Ex-tra, export management was more manual and less flexible, according to Marianne Rees, manager of customer service. "Now we just enter the order once, and we can get any kind of report we want," she said. "We used to manually type invoices, and the old system did not do order acknowl-

edgements or pro forma invoices."

Syntra recently struck an agreement with OCR Services, Inc. in Rockville, Md., whereby Syntra offerings will include access to OCR Services' export compliance data. The data is a compilation of federal regulations governing the export of drugs, chemicals, munitions and the like.

## Customs plans to automate export system

Import document processing at the U.S. Customs Service has been automated for a number of years, but the processing of export documents has remained mostly a cumbersome, error-prone manual system.

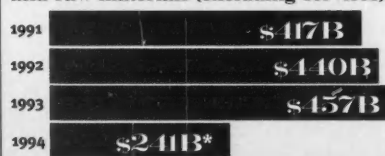
But in July 1995, that should start to change. That is when the Customs Service, working with a number of other federal agencies, is due to bring up a pilot version of the Automated Export System. The system will accept automated input from exporters, generate export statistics, ensure compliance with export regulations and generally speed export processing.

A key part of Customs' development effort is to devise one electronic input form to replace a host of semiredundant paper forms that exporters have to complete for multiple government agencies.

"Also, we will be able to target the high-risk [exports] and keep our noses out of the stuff where there is no risk," said Rebecca Trafton, an Automated Export System team member at customs.

—Gary H. Anthes

U.S. exports of manufactured goods and raw materials (excluding services)



\* January - June  
Source: International Trade Administration, U.S. Department of Commerce

support export operations. It costs between \$15,000 and \$350,000, depending on the number of users and modules chosen, and runs in a variety of environments — most often on a Unix server on a Novell, Inc. NetWare LAN, Anthos said.

DeKalb exports 5,000 metric tons of seeds to some 50 countries each year, and the company uses Ex-tra to generate export documents, sales and accounts receivable reports and customer invoices, Schmid said. She said the software was crafted to handle international

## Sun

CONTINUED FROM PAGE 47

Brian Holgate, systems manager for engineering at Cyrix. Prices for Tatung's SPARC 10-equivalent machine are 20% lower. Cyrix also has 15 Sun-compatible servers from Solbourne Computer, Inc., which recently stopped making SPARC hardware.

Clone makers' willingness to move away from SPARC — at least for some product lines — does not surprise longtime Sun watchers. Analysts said Sun held too much of a technology lead for too long before it shared lead time with SPARC resellers.

"Historically, the little guys are the first to feel the tilting of the playing field," said Andrew Allison, a RISC chip analyst in

Carmel, Calif.

Sun said it tried to level that playing field by creating the Sun SPARC Technology Business last year to shepherd SPARC chips to the market. The move also gave clone makers a head start in shipping Solaris 2.4 this past fall.

But it will be increasingly difficult to prevent some SPARC vendors from straying from the Sun fold.

"Most of the Sun clone vendors are looking at other opportunities as well," said Laura Segervall, manager of workstation research at International Data Corp.'s Mountain View, Calif., offices. "It's a hedging-your-bet kind of thing."

That is because clone makers generally ship a small number of SPARC-compatible units and look to the emerging low-end RISC PC market as a way to grow sales dramatically.

It will be increasingly difficult to prevent some SPARC vendors from straying from the Sun fold.

## Briefs

### Toshiba touts "wireless DAN"

Promoting the concept of the "paperless conference," Toshiba Corp. has unveiled a wireless technology that will let users send and receive text, graphics and picture data among multiple PCs. Called "wireless DAN" (desk-area network), the Windows-based software can transmit data through either a PCMCIA-type wireless LAN card at 1M bit/sec. or an infrared transceiver at 2M bit/sec. The system can send and receive over a distance of 100 meters with the LAN card. It is targeted toward users who want to hold meetings at which they can create, distribute and edit documents on the PC, a Toshiba spokesman said. The company is developing software that will enable the system to work with printers, he said. Currently a prototype, the system will be marketed within two years, the spokesman said. Pricing has not been set.

### D&B Software expands services

Dun & Bradstreet Software has added an-

other maintenance program to its set of services. Customer Select creates three different levels of product service, with costs increasing as coverage expands. Earlier this year, D&B Software offered a maintenance price lock-in program and a value unit pricing model.

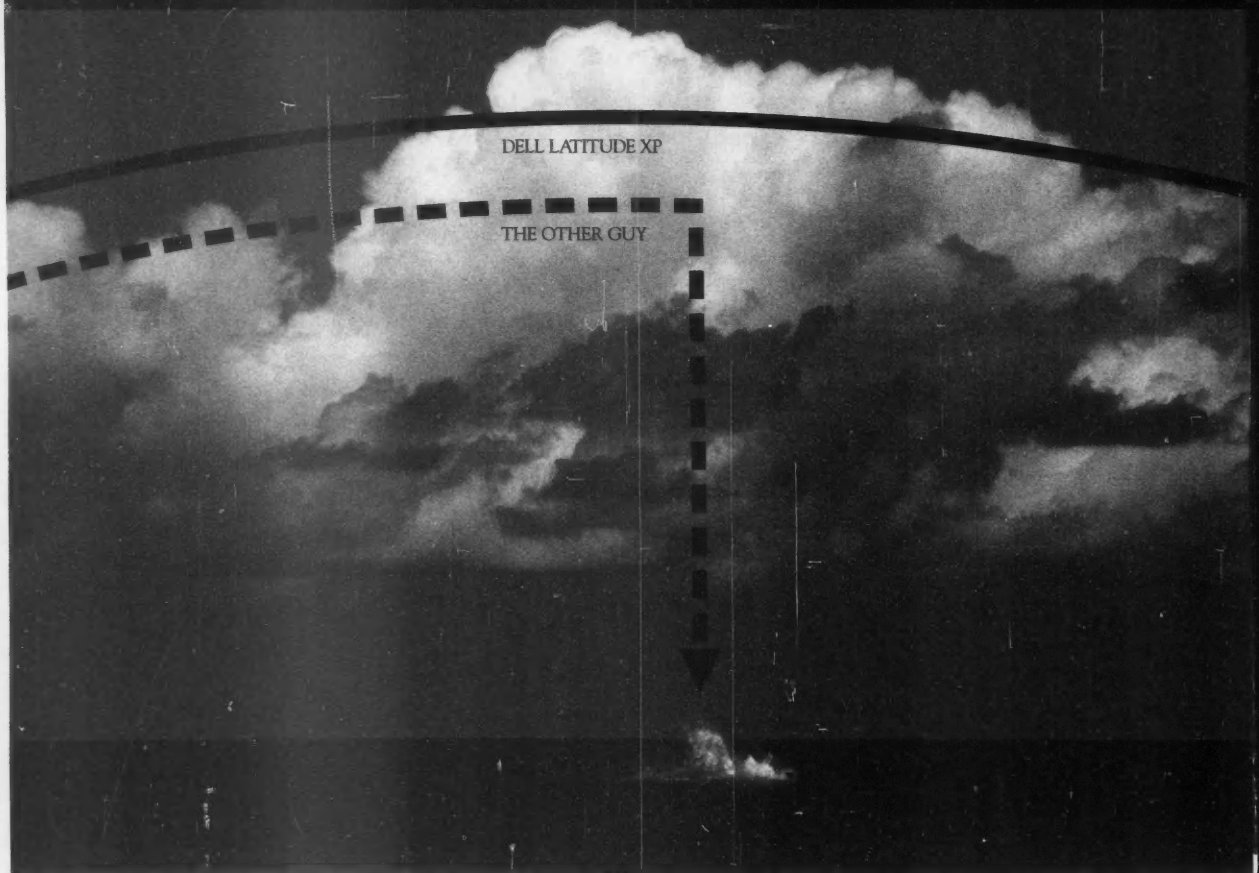
### Answer integrates software

Answer Systems, Inc. in San Jose, Calif., said it would integrate its Unix-based Apriori client/server help desk software with NetWare Telephony Services, a joint product offering from Novell, Inc. and AT&T Corp. NetWare Telephony Services links office communication and computer networks, providing a single platform for integrated voice mail, fax service and electronic mail.

### AT&T's Mail finds support

Three sales force automation software vendors have announced they will support AT&T Corp.'s Mail E-mail service. They are Tracker Software, Inc. in Minneapolis, National Management Systems in Vienna, Va., and SalesBook Systems in Pittsford, N.Y.

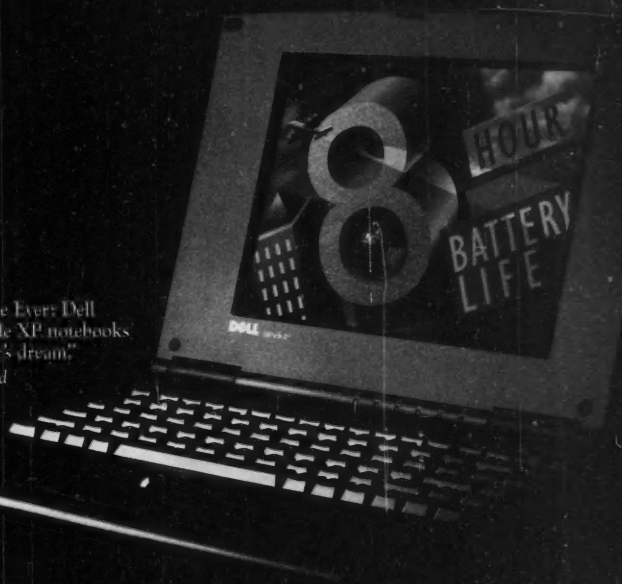
# ANNOUNCING THE ONLY NONSTOP FROM CHICAGO TO LONDON.



\*Non-discountable promotional price expires 1/31/95. Prices valid in the U.S. only. Some products and promotions may not be available outside the U.S. Prices and specifications subject to change without notice. Quote from PC World, 10/94 issue, p. 64. \*Latitude is powered by a NiMH battery, with the option of replacing the diskette drive with a second NiMH battery. The Intel Inside logo is a registered trademark and IntelSX, IntelDX2 and IntelDX4 are trademarks of Intel Corporation. Dell disclaims proprietary interest in the marks and names of others. ©1994 Dell Computer Corporation. All rights reserved.



"Longest Battery Life Ever: Dell Computer's new Latitude XP notebooks are a workaholic's dream!"  
PC World



The big news at 35,000 feet these days is Dell Computer's line of Latitude™ notebooks and their unrivaled eight hours of battery life.<sup>Δ</sup>

Check either one of these workhorses-of-a-notebook on board and you'll get a world of work done as you streak across the Atlantic.

While those two-hour laptop guys around you are eventually left eating peanuts and reading the safety instructions for the fifth time.

And for the power mongers out there, we even offer a 100MHz Dell® Latitude XP™ for just \$3499. So call today to order these long-lasting Dell Latitude XP or Dell Latitude notebooks.

And let the people at your office check them onto their next transatlantic flight.



So then, when they finally touch down on that blessed plot, they'll have a notebook with plenty of juice left to do that expense report.

## HOW DELL GIVES YOU TRUE 8-HOUR BATTERY LIFE<sup>Δ</sup>

*The Latitude XP notebook's lithium ion battery packs more juice into the same space as older batteries.*

*The Latitude notebook, our value-priced model, provides up to 8 hours<sup>Δ</sup> by supporting 2 NiMH batteries.\**

*Our exclusive power management software is designed to dynamically adjust energy consumption.*

*Dell's engineering expertise combines advanced battery technology with power management software to give you higher performance without sacrificing battery life.*

*<sup>Δ</sup>Actual battery life will vary depending on nature and frequency of use and configuration.*

# DELL™

### DELL LATITUDE XP IntelDX4™ 100MHz System

- 9.5" Active Matrix Color Display
- 8MB RAM/340MB HDD
- 3-year Warranty<sup>†</sup>

**\$4799**

Product Code #300188

### DELL LATITUDE XP IntelDX4 100MHz System

- 9.5" Dual Scan Color Display
- 8MB RAM/340MB HDD
- 3-year Warranty

**\$3499\***

Product Code #600025

- ### DELL LATITUDE IntelDX2™ 50MHz System
- 9.5" Dual Scan Color Display
  - 4MB RAM/340MB HDD
  - Second NiMH Battery – \$99 more (Required for extended battery life)

**\$2499**

Product Code #600010  
(System not pictured)

- ### DELL LATITUDE IntelSX™ 33MHz System
- 9.5" Dual Scan Color Display
  - 4MB RAM/200MB HDD
  - Second NiMH Battery – \$99 more (Required for extended battery life)

**\$1999**

Product Code #600009  
(System not pictured)

**(800) 626-4308**

MONDAY-FRIDAY 7AM-9PM CT • SATURDAY 10AM-6PM CT • SUNDAY 12PM-5PM CT  
KEYCODE #12004 • CANADA\* CALL 800-387-5755 • MEXICO CITY\* CALL 800-228-7811

## Backup, restore gets boost

NetFrame app designed for client/server world

By Jaikumar Vijayan

Reliable tape backup and restoration — an oft-cited concern for users moving critical applications to client/server computing platforms — may have just gotten faster for users running Novell, Inc.'s NetWare on Extended Industry Standard Architecture-based servers.

Superserver vendor NetFrame Systems, Inc. in Milpitas, Calif., recently introduced Release 3.0 of its DataJet tape backup and restoration system software, incorporating support in NetWare 3.12 and 4.02, DOS, Macintosh, OS/2 and Unix environments.

Designed primarily for systems housing 10G bytes of data and more, the release provides backup performance rates of up to 15G bytes per hour and comes with integrated redundant arrays of inexpensive disks Level 5 support.

### New solutions needed

"Server capacities and data availability requirements are just exploding. Traditional file-by-file backup methods clearly are becoming unacceptable to a lot of users," said Steve Getz, director of NetFrame's DataJet product line.

According to Getz, the new DataJet software will permit full-volume image backup that provides customers with a high degree of fault tolerance.

"It does provide users [with] a much higher performance tape backup and restore capability with a high degree of fault tolerance. It's important from the perspective of solving a user's particular

problem," said Fara Yale, an analyst at market research firm Dataquest, Inc. in San Jose, Calif.

At the same time, analysts said the kind of high-end backup features offered by Release 3.0 were likely to be required only by a small but growing niche of very high-end users who have large concentrations of critical data on PC servers.

### Help make the switch

NetFrame said it hopes to position the new product as a tool for network administrators planning to shift from NetWare 3.12 to NetWare 4.0. According to Getz, DataJet will allow administrators to achieve the equivalent of Novell's recommendation to complete two full data backups prior to converting a server to NetWare 4.0.

New features in DataJet Release 3.0 include the following:

- A burst protocol to increase across-the-wire backup speeds.
- Backup space calculation that estimates the backup space required for the data selected.
- A tape drive configuration display that lists all the configured tape drives.

Existing DataJet users can purchase the software for \$295 for a three-tape configuration, \$695 for a four-tape configuration and \$995 for an eight-tape configuration.

Actual pricing for the complete DataJet backup and restore product, including hardware, starts at \$14,995 for a three-tape backup configuration and ranges up to \$42,995 for an eight-tape configuration.

## Users' choice: All-inclusive or add-on project management

By Tim Ouellette

There are two ways to face Microsoft Corp.'s software dominance, and project management software developers Primavera Systems, Inc. and Micro-Frame Technologies, Inc. have each chosen a different path.

"One way is to compete, and one way is to stay one step ahead of the technology curve," said Karen Zevin, an analyst at International Data Corp. in Framingham, Mass. Bala Cynwyd, Pa.-based Primavera, a leader in high-end project management software, has challenged Microsoft Project's supremacy in the low-end project management software market with SureTrak for Windows.

On the other hand, Micro-Frame in Ontario, Calif., has built on top of Project with ProjectServer 4.0, a client/server software extension to Project.

### Right tool for the job

At the Greenville, S.C., office of Fluor Daniel, Inc., an engineering/construction firm, more than 100 copies of SureTrak have been installed on individual engineers' PCs, said principal project control specialist Alan Waite. "We have a lot of small projects, and we have a lot of engineers who have to schedule projects and don't want to be burdened with excess capabilities," Waite said. SureTrak has worked out well with the company's overall planning done on Primavera's Project Planner and individual projects managed by SureTrak, he added.

Zevin said Primavera's SureTrak provides a more structured, rules-based approach to project planning than Project and is an option for someone who expects to need more regimented project management down the road.

She said Micro-Frame's ProjectServer is the way to go for organizations that use Project and are moving to a client/server architecture.

For users who require full tracking throughout the life cycle of a project, SureTrak provides a Progress Spotlight feature that highlights all tasks that should be completed in a time frame the users specifies.

Joel Koppelman, president of Primavera, said with features such as Progress Spotlight, SureTrak targets part-time project planners who want more than a bar charting tool for initial planning but do not require a high-end project management software package.

### Build it on top

Micro-Frame decided to add functionality directly to Project, especially with the large number of corporations that have

standardized on the software. According to Micro-Frame President John O'Neill, ProjectServer extends Project's management capabilities to a large number of projects by providing central consolidation of Project files.

Entergy Services, Inc., a utility in New Orleans, La., needed to standardize planning for more than 120 information systems projects.

After a pilot test, the firm chose a combination of Project and ProjectServer. According to Sharon Ledet, information technologies senior consultant of IS planning, the company now enters project details into Microsoft Project, while Micro-Frame's ProjectServer consolidates the files — previously scattered among various servers and PCs — into a central database. "Now we can look in one place and find all the projects," she said.

ProjectServer also tracks action items, checks for open tasks, provides multiproject reporting and is capable of managing thousands of projects.

Ledet said she has not noticed any reduction in the product's response time when additional projects have been added to ProjectServer.

Primavera says its SureTrak for Windows targets part-time project planners who want more than a bar-charting tool for initial project planning.

## S smooth the path for your users as they migrate from IBM mainframes to Unix.

*"Users were immediately productive. No training was required and users were delighted. They could function as they did on the mainframe."*

—Commonwealth Edison

*"Users were ecstatic and are more productive as a result of uni-SPF."*

—AT&T

*"Normal use of uni-XEDIT and uni-REXX is going so smoothly there has been no need for their support desk."*

—Monsanto

*"uni-REXX and uni-XEDIT provided our users with a maximum of functionality while creating a minimum of confusion during the transition."*

—Allison Engine

1-800-228-0255

**wrk/grp** the business choice for open systems  
the workstation group



**Biscom, Inc.** has announced Faxcom for NetWare, a Novell, Inc. NetWare Loadable Module-based fax server.

According to the Chelmsford, Mass., company, Faxcom for NetWare provides fax services to users of NetWare 3.x and 4.x, Windows, DOS, Macintosh and Unix X Window System. It automates inbound routing of received faxes, converts faxes to text, manages private and public fax phone books and interfaces to scanners for faxing hard copy.

Prices start at \$1,495.

► **Biscom**  
(508) 250-1800

**Mega Drive Systems, Inc.** has announced the MR/20, a redundant arrays of inexpensive disks (RAID) system for Macintosh Quadras and Power Macintoshes.

According to the Beverly Hills, Calif., company, the MR/20 provides 84G bytes of on-line RAID storage.

The product was designed for use with video servers and high-end graphics servers connected to Macintosh platforms.

Features include 20 fully loaded, hot-swappable, 4.2G-byte drives, support for RAID Levels 0, 3 and 5 and a SCSI-2 interface.

The MR/20 costs \$20,200  
► **Mega Drive Systems**  
(310) 247-0006

# N O W

---

- Revolutionize the way you work.
- Print, copy, and fax without leaving your desk.
- Optimize productivity and performance.

# Y O U

---

Canon has created a totally new concept in digital office equipment systems that redefines productivity and performance. The Digital Imaging System GP55 Series. It's the culmination of Canon's technological vision that is designed to meet your needs now and in the future. It functions on your network as a 30-ppm, 400 dpi laser printer that can staple, sort, and duplex. It's also a digital copier and can serve as a Group 3 Fax. All this without ever having to leave your desk.

The GP55 Series does it all — with a unique, optional Multi-Device Controller (MDC) that gives you the flexibility to configure function boards to suit your needs. And since

the GP55 Series utilizes parallel processing technology, it can perform more than one function at a time. But best of all, the GP55 Series interfaces with standard network protocols and page description languages. So now everyone on your LAN can sit behind their desk and benefit from the power of Total Document Management. Which makes this a true instrument of efficiency and productivity — with the reliability you've come to expect from Canon.

As usual, Canon's advanced technology moves you further ahead. When the rest say you can't, Canon says you can.

For more information, call 1-800 OK CANON.

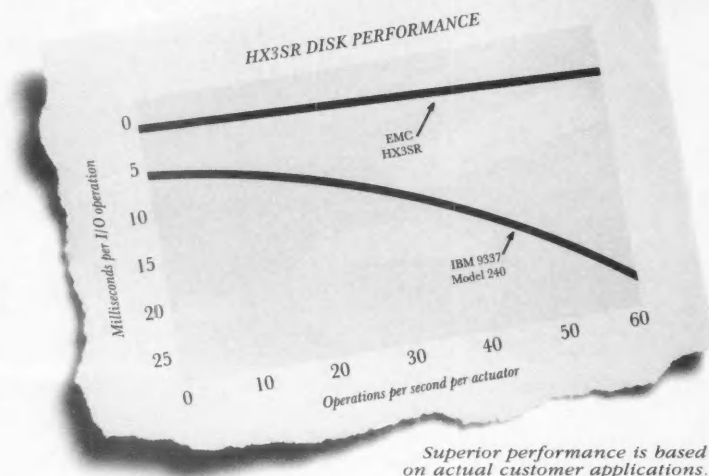
# C A N

---

**Canon**



# We Don't Want To Hurt IBM. We Just Want To Make The AS/400 Scream.



No doubt, IBM has a big seller in the AS/400. But the AS/400 is far from perfect. In fact, it's pretty slow in the storage department.

Which is precisely where we at EMC come in. Simply attach our HARMONIX™ HX3SR storage to any AS/400-9406 and you've got a system that can make your operation more productive than anything IBM has out there.



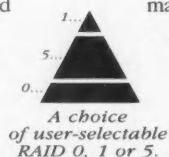
*HARMONIX works with AS/400 and Advanced Series models.*

That's because the HX3SR – affectionately known as “The Screamer” – is the most advanced midrange DASD anywhere. In head-to-head comparisons using customer applications, it outperformed

IBM's latest storage offering by as much as 77%.

Plus, it's user-selectable among RAID 0, 1 and 5, so you can change availability levels as your needs change. It also lets you

upgrade and reconfigure just as easily. And phones home automatically before a problem ever becomes one.



That is, if you ever need it to. With over 10,000 HARMONIX units already

installed, its reliability is proven.

To learn more about the HX3SR, give us a scream at 1-800-424-EMC2, ext. 301.

**EMC<sup>2</sup>**  
THE STORAGE ARCHITECTS

## Analysts see slow NetWare move

Novell cites 'stale and bad information' about Version 4.1

By William Brandel and Laura DiDio

As Novell, Inc. tries to put its spin on the NetWare 4.1 launch, market analysts are formulating their own not-necessarily-auspicious scenario regarding the forthcoming rollout.

Opinions in the analyst community on NetWare 4.1's prospects for success range from downbeat to enthusiastic.

One of the more eyebrow-raising reports is from Computer Intelligence InfoCorp in La Jolla, Calif. Its report, released last month, was called "Novell's Strategy for NetWare 4.x Appears DOA."

LAN service director Stan Schatt, the report's author, said that while NetWare 4.x is very attractive for customers installing new LANs, Novell's strategy "is less than adequate to move the [NetWare 3.x] people to NetWare 4.1."

Lee Doyle, an analyst at International Data Corp. (IDC) in Framingham, Mass., in his recent report "Novell: Directions for NetWare 4.x and Beyond," said acceptance for NetWare 4.0, released in early 1993, has been "decidedly lukewarm."

According to IDC statistics, 51,000 licenses of NetWare 4.x were installed in 1993. That figure bested of-

ferings from competitors such as Microsoft Corp. but represents only 15% of the installed base of NetWare 3.x users, Doyle said. However, IDC forecasts the number of NetWare 4.x licenses will rise to between 70,000 and 75,000 this year.

"The follow-on version 4.1 is aimed at penetrating the mainstream Novell customer. We anticipate that NetWare 4.x will ramp up more rapidly during 1995 after Novell releases 4.1," Doyle said in the report.

### Staying the course

Network administrators at small and medium-size organizations agreed with Schatt that there is no compelling reason for them to migrate to NetWare 4.x right away. These same users also said that while their companies would likely upgrade from NetWare 3.x, they are also leaving the door open for Microsoft's Windows NT Server.

"We've been running 3.1 for two years, and it works fine and suits our needs. We'll probably upgrade to NetWare 4.1 when there's time, sometime in 1995," said Rob Beyer, supervisor of network services at Southam

### A handful

A Computer Intelligence InfoCorp survey showed that for the first quarter of 1994, 14,995 LANs at companies polled were running NetWare 3.x. A total of 766 companies said they were evaluating NetWare 4.x, while network managers were evaluating it for future adoption on another 948 LANs.

Newspapers in Toronto.

But Beyer said Southam Newspapers is also considering NT Server.

"We're taking a very preliminary look at NT Server, and there's always a possibility that it could supplant NetWare at our organization," Beyer said.

Mark Herder, manager of data communications at Dartmouth Hitchcock Medical Center in Lebanon, N.H., noted that while he prefers NetWare to NT Server, the choice is not solely his.

"I don't drive the [network operating system] or applications bus. I'm just a passenger," Herder said. "If an executive in a particular department absolutely demanded NT Server, we would have to install and support it."

Schatt's report estimated that only 3,800 LAN sites are evaluating NetWare 4.1 this year. Schatt said that number came from polls conducted earlier this year in which sites were queried about their evaluation intentions for the next 12 months. At that time, NetWare 4.1 was in its alpha release. Schatt said the number might have increased slightly since then, but not by much.

NetWare, page 60

## SMS impresses despite resource needs

By Steve Moore

■ As Microsoft Corp. moves aggressively onto the corporate systems management playing field with a new type of football called Systems Management Server (SMS), users on many corporate teams are huddling to determine whether they want to play Microsoft's game.

"SMS looks very promising and feature-rich, but we're not in a hurry to jump to any systems management platform," said Tony Defeciani, manager of microsystems and communications for the New York State Assembly in Albany. Although he is currently evaluating SMS, "We will take a step back, give it time to mature and see where the industry is going," he said.

Another user was more bullish. "It's an incredible program — somewhat problematic at this point, not quite cooked yet, but awesome," said Adam Lynn, a senior LAN engineer at Micro Research Industries in Alexandria, Va. With SMS fully configured and acting as an integral part of Microsoft's BackOffice applications suite, Lynn said, "every Microsoft, LAN Manager, OS/2 and Novell workstation in this building, connected by routers, frame relay or whatever, belongs to me."

SMS' software management capabilities are particularly valuable, Lynn said,

### WHAT USERS SAY ABOUT MICROSOFT'S SYSTEMS MANAGEMENT SERVER

#### PROS

- + Gives complete overview of client/server network and provides detailed information on each node
- + Integrates with Microsoft's BackOffice suite
- + Supports centralized management of software applications

#### CONS

- Requires large amounts of RAM and disk capacity
- Runs only on NT Server
- Causes confusion as to how DMI and Microsoft's proprietary alternative will coexist

because they enable him to control software inventory the way corporate managers desire.

"We're all afraid of the Software Publishers Association, and I can tell you exactly what software we have and that we are completely legal," he said. Applications on a list of forbidden software "can automatically disappear off everybody's machines," he added.

### Worthwhile trade-off?

One downside of SMS, Lynn observed, is that "on the desktop, it's a hog that needs 32M bytes of RAM and 500M bytes of disk. [If you have] less than that ... you can't even load it and use it."

But Defeciani was unconcerned. "On a computer used for management purposes, I don't think the hardware re-

quirements for something that can give you this much capability are much of an issue," he said.

For users undaunted by SMS's appetite for server resources, "the success of SMS will depend on the willingness of customers to deploy Windows NT servers," said Dave Passmore, a principal consultant at Decisis,

Inc. in Herndon, Va. "NT is certainly picking up momentum, but it still has a long way to go to come close to the acceptance of NetWare."

SMS is attractive for Microsoft shops. But when it comes to server deployment, Passmore said, "many organizations will be more interested in desktop utilities that run either as Unix applications" or Novell, Inc. NetWare Loadable Modules.

Still, SMS is "moving in the right direction in its ability to dig deeper at the application level as well as the network and systems levels," said Charles Robbins, director of data communications research at Aberdeen Group in Boston.

One user hinted at a future SMS capability that will help companies monitor the computer use of telemarketing agents.

While the voice conversation is monitored simultaneously, with SMS "you can see if employees are pushing the right buttons when they are supposed to," said Tim Muilenburg, director of information technology at MCI Communications Corp.'s consumer division in Austin, Texas. "SMS allows you to remotely log in to somebody else's PC, watch their keystrokes and then take control and make changes if necessary," he said. However, the remote-control capability is "not in production yet," he said.

Lynn said that while remote-control features can be valuable, "I prefer to go to users and help them personally as opposed to taking over their machines remotely, which is impersonal and can be threatening."

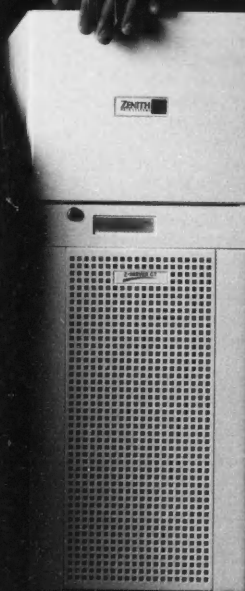
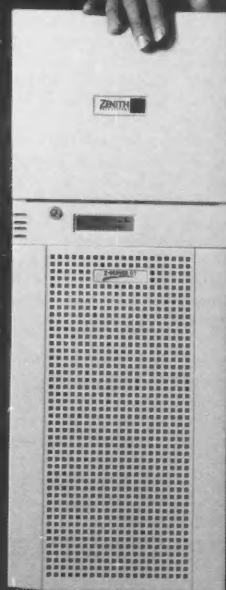
### Proprietary option

Another issue, Passmore said, is that although SMS supports the Desktop Management Interface (DMI) for remotely managing LAN-attached PCs, it can also use a similar but proprietary Microsoft method for tracking desktop resources.

"There is a lot of confusion about whether DMI will be needed for Windows 95 users," he noted.

"Machines running [Windows 95] don't appear on my screen, and those users escape my scrutiny," Lynn said. "I'm not sure what Microsoft will do about that."

# When We Say Server





# s, We Mean Business.

Taking care of business. It's what you need in a server. And it's why your business should call ours.

For 10 years we've been packing power into some of the world's best portable PCs. Now we're doing the same for larger computers. Like the ones that run your workgroup, or even your whole company.

Fact is, we've made it our business to be one of the most connected computer companies in the world, and that's why we can offer a full range of reliable, fault-resistant servers.



Z-SERVERS are easy to install, maintain and upgrade. Plus, they're designed to work with everything in your environment, from computers to operating systems to applications.



#### INTRODUCING THE HIGH-PERFORMANCE Z-SERVER GT:

Up to four Pentium  
90MHz CPUs

Upgradable to P6  
Intel Multi Processor  
Specification 1.1-compliant

#### BALANCED I/O DESIGN

PCI and EISA bus slots  
Dual Wide & Fast SCSI-2 disk  
controllers standard  
Up to 1 GB ECC memory

#### RELIABLE

Hot removable hard  
disk drives  
PCI RAID controller  
Server management features  
3-Yr. limited warranty  
3-Yr. on-site service

But we don't stop there. We also deliver the dependable service and support you need. What's more, our remote management tools give you the power to monitor hardware, diagnose problems, set alarms and perform preventative maintenance from any PC on the network. You'll find we work well with budgets, too, which means you get all the performance users are asking for, at the price your accounting department demands.



For more information and all the specs, give us a call today. Because once you put the power of Z-SERVERS at your side, hey, you're in business.

**1-800-289-1320, Ext. 5145**

**ZENITH**  
DATA SYSTEMS   
*Make The Connection*

Copyright © 1994, Zenith Data Systems Corporation. "Make The Connection" is a trademark of Zenith Data Systems Corporation. Contact Zenith Data Systems for status on certification and copies of certification reports. Intel Inside is a registered trademark and Pentium Processor is a trademark of Intel Corporation. All other trademarks are property of their respective holders.

# Speedy LAN upgrades due this week

By Stephen P. Klett Jr.

UB Networks, Inc. and Network, Inc. this week will roll out boxes aimed at providing low-cost relief for bandwidth-strapped networks.

San Jose, Calif.-based UB Networks will take the wraps off a 12-port Ethernet LAN switch with a 1.2G bit/sec. backplane and optional Fiber Distributed Data Interface (FDDI), Asynchronous Transfer Mode (ATM) and 100M bit/sec. Ethernet uplinks for backbone or server connectivity.

Meanwhile, Irving, Texas-based Network will unveil an eight-port, 100M bit/sec. Ethernet hub that will cost \$1,795, or \$244 per unmanaged port. The Micro 100 is aimed at segmenting groups of "power users" or providing high-speed connectivity to server farms, company officials said. Grand Junction Networks, Inc. is the only other vendor shipping a 100M bit/sec. Ethernet concentrator.

While the price is nice, for beta site Air Products, Inc. in Trenzertown, Pa., GeoRim's main boon is more bandwidth, according to Virgil Palmer, manager of engineering research, telecommunications services.

"You're always in a pinch for bandwidth, and you can never satisfy your users, but this should help," Palmer said. Air Products is upgrading its campus backbone to FDDI and is testing GeoRim as an uplink "to give multiple IP networks high-speed performance," he said. "We also believe [GeoRim] will be a stepping-stone to ATM."

If Air Products continues to see the same levels of performance, Palmer said the company may deploy as many as 40 GeoRim switches in the next year or so. "We've had a need [for] very high-speed routing and subnet capabilities and, until now, there weren't any products available to do this."

Meanwhile, in addition to the Micro 100, Network plans to deliver the following 100M bit/sec. Ethernet

## Quick connects

Users are getting more high-speed LAN upgrade options

Vendor	UB Networks	Network
Product	GeoRim/E	Micro 100
Category	Switching hub	Repeater
Medium	10Base-T	100Base-TX
Port density	12	8 (unmanaged)
Price	\$5,995	\$1,795

## ATM-ready

At \$500 per port, the store-and-forward GeoRim switch was designed to extend the performance of existing hubs without requiring "forklift" upgrades. For example, when UB Networks ships an ATM interface for GeoRim in the second quarter of next year, users can position the box as a feeder device into their existing high-end hubs to aggregate Ethernet traffic onto an ATM backbone, according to Tyrone Pike, senior vice president and general manager of the network products division. "GeoRim can make any vendor's hub ATM-ready," he said.

Pike said UB Networks will deliver FDDI for GeoRim early in the first quarter of next year, followed by a 100Base-T interface and then an ATM interface in the second quarter. The firm will also add support for Cisco Systems, Inc. routing protocols in the third quarter. GeoRim's pricing impressed analysts.

A "\$500 list is a very aggressive price that is below market average — typically, segment-type switches run \$500 to \$600 on the street," said Tam Dell'Oro, an analyst at Dataquest, Inc. in San Jose.

products next year:

- Micro 100 versions for its FastStack stackable hub line. Second quarter.
- 10/100 PowerPipes II switch with six 10Base-T ports and one 100Base-TX port. Third quarter.
- SwiftNIC 10/100 XT/AT bus, Extended Industry Standard Architecture and Peripheral Component Interconnect adapters. Third quarter.

Beta site Dr Pepper Bottling Co. of Texas plans to use the Micro 100 hub to provide 100M bit/sec. connections to its desktops to handle the bandwidth needs of a shift from mainframe to client/server computing.

"We're going to give the users as much power and data capabilities to the desktop as possible. And to pull all of this data back and forth, we will need bigger pipes," said Chris Rodriguez, MIS manager at the soft drink distributor in Irving, Texas. "We have a big demand now for 100M bit/sec. technology, which will only grow during the next year or so."

Dr Pepper plans to roll out as many as 80 of the Network hubs next year, Rodriguez said.

# Partnership targets mixed-vendor nets

By Steve Moore

Aching from a bellyful of disparate network and systems management technologies, users hanker for integrated products that are easier to stomach. Network General Corp. and Aim Technology, Inc. last week said they will respond to the need with plans to jointly create a new recipe for integrated, end-to-end, client/server management.

Users are asking for specific capabilities that Network General and Aim say will emerge from their partnership.

"I want some type of expert system that will give me more information on client/server problems and suggest potential solutions," said Norman Teinowitz, network administrator at Timberline Software Corp., a construction industry software provider in Beaverton, Ore.

"The biggest thing we'd like to see is a way to constantly monitor our network and collect long-term statistics rather than snapshots," said Robert Karls, a wide-area network engineer at Burlington Northern Railroad in St. Paul, Minn.

## No details

The two vendors said they think they have the answer. "Network General looks at traffic on the wire and tells you what's wrong, and [Aim's] SharpShooter looks inside the server and desktop client and tells you what's going on there," said Network General Chief Executive Officer Les Denend.

SharpShooter already recommends solutions to client/server network problems and supports continuous performance monitoring, but it is still unclear how those capabilities will be extended as a result of Aim's partnership with Network General.

"Aim has attractive technology for capturing information on the systems side, and it will be very valuable to users if it is tightly coupled with Network General's products," said Charles Robbins, director of data communications research at Aberdeen Group in Boston.

Network General and Aim declined to provide details on how their products will be integrated.

John Morency, a principal consultant at Strategic Networks Consulting, Inc. in Rockland, Mass., cautioned that even after the two companies have completed the integration, user organizations will have a hard time finding staff members who understand enough about both network and systems management to derive the maximum benefit from such an effort.

## NetWare

CONTINUED FROM PAGE 57

Novell disagrees.

"Boy, do they have stale and bad information," said Jim Greene, NetWare 4.1 product line manager at Novell. He said the CI InfoCorp report used essentially the same information Novell had 18 months ago. Greene would not give exact numbers but said fulfillment orders for NetWare 4.1 are now approaching six figures.

## No big deal

Schatt attributes the alleged lag in NetWare 4.x migration to the fact that neither Novell nor third-party software vendors have yet produced "integrated applications" that deliver value-added features to the 4.x platform.

"The smartest thing Novell could do is take all the 4.x features, minus NetWare Directory Services, and release an optimized 3.2 version of the [network operating system]," Schatt said.

This strategy could appeal to users such as Herder, who said he has delayed migration to NetWare 4.1 "because currently there's no real technical need."

"We don't need directory services or a single log-on since we're not a huge Novell shop. So a lot of the advantages [in NetWare 4.1] aren't a big deal for us," Herder said.

Eventually, Herder said, Dartmouth Hitchcock will deploy NetWare 4.1 as a departmental server, "but for the foreseeable future, my smaller NetWare servers can continue running 3.11 as long as I don't have to add a lot of disk capacity."

## Trying out migration aid

If the initially brisk demand for Preferred Systems, Inc.'s DS Standard migration tool for Novell's NetWare 4.x is any indication, mainstream users are at least testing the new platform even if they do not plan to install it in the short term.

DS Standard is a Windows-based tool that has been shipping since November. It provides network managers with a shorter and easier server configuration from NetWare 3.x to 4.x.

The Windows-based utility gives the network manager a split-screen view to find and convert NetWare 3.x binderies into objects that will reside on the NetWare Directory Services tree.

Jack Serfass, president and founder of Preferred Systems in West Haven, Conn., said the company has already closed deals

with three Novell Master Licensing Accounts.

"Normally, sales to large customers take three to six months. Our two main domestic distributors, GBC/Vitek and Distribupro, Inc., had a two-week order backlog for DS Standard," Serfass said.

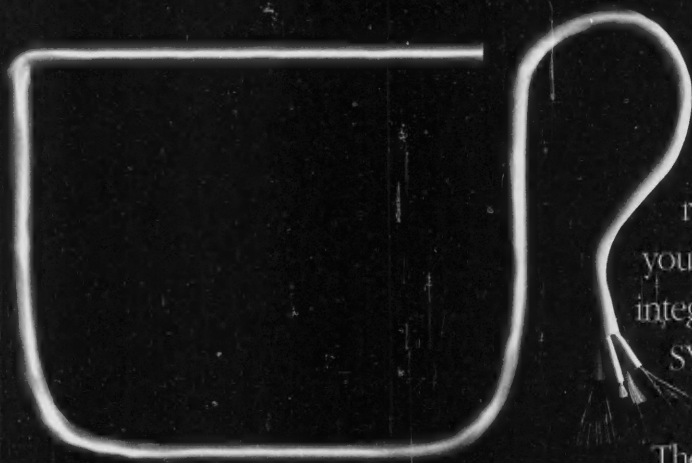
Novell reportedly bought 100,000 copies of DS Standard, but neither Preferred Systems nor Novell would confirm the number.

Novell will distribute five free promotional copies of DS Standard to each of its Master Licensing Accounts, Serfass said. NetWare resellers, authorized education and service centers and Certified NetWare Instructors will each get one free copy, he added.

DS Standard pricing ranges from \$295 for 25 users to \$4,495 for a 1,000-user license.

—Laura DiDio


Imagine a data network  
where there's no crosstalk,  
no lost bits, no signal loss,  
and the help desk has been  
turned into the coffee station.



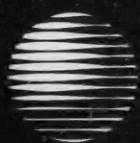
It's not the year 2000. It's  
right here. Right now. So if  
you're concerned about data  
integrity, relax. You need AT&T

SYSTIMAX® Structured  
Cabling Systems (SCS).



They provide an incredible level  
of data reliability. And, because the products are designed and manufactured  
by AT&T, they're compatible and interoperable. The design makes moves and  
changes fast and easy. What's more, there's enough bandwidth to make the  
system virtually future-proof. All certified AT&T SYSTIMAX SCS installations  
come with a 15-year extended product warranty and application assurance.  
And are backed by AT&T Network Systems and Bell Laboratories service and  
support. And if that isn't reliable, what is?  AT&T SYSTIMAX SCS  
is available only through authorized resellers and distributors. To find out more,  
call 1 800 344-0223, ext. 4044. Outside the U.S., call 602 233-5855.

**AT&T SYSTIMAX® SCS. The last cable system you'll ever need.**



**AT&T**  
Network Systems



Fortunately at Pennant,<sup>™</sup> The IBM Printing Systems Company, we concentrate on the circulation of your information as if your company's life depended on it.

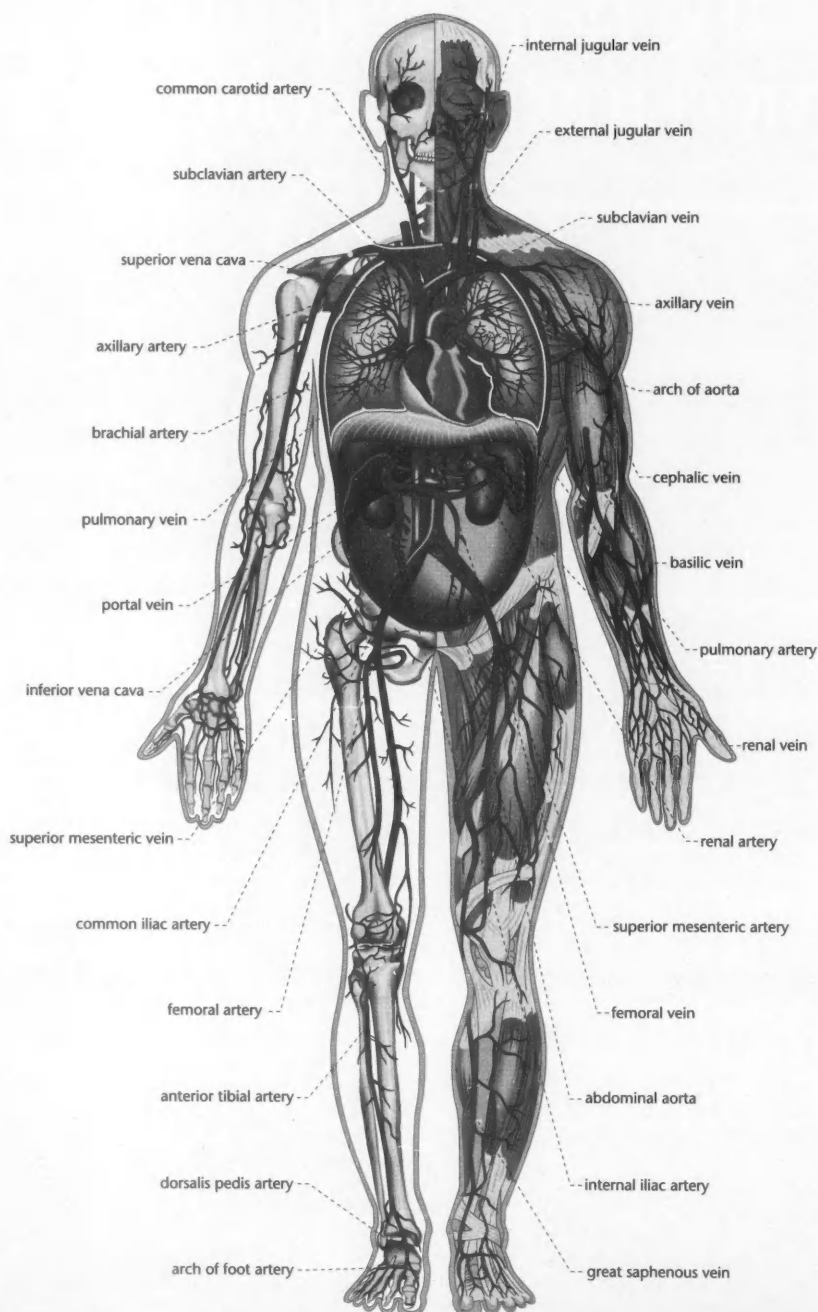
Because it does.

So to improve your information flow, we're redefining printing.

You see, we use the word "printing" rather loosely. To us, it's the presentation of information. Through local area networks that work with personal computers and mainframes. Distributed

printing with centralized control of logos, signatures and data. And on-demand publishing.

We also provide a dose of preventive medicine. By getting your information in shape well before you need to print it. With electronic annotation. Archiving and retrieving. On-line viewing. So you see information on the screen exactly the way it appears in printed form. (Call up a customer's bill, see a customer's bill exactly the way it was printed, logos and all.)



Even if your work flow skips a beat, we keep it moving. If a printing error occurs, you can immediately identify the problem, fix it and pick up the job right from where you left off. That alone could save you a cardiovascular scare or two.

Of course, when it comes to putting marks on paper, no company offers you more printing system options than Pennant. And every one is backed by service that's available 24 hours a day, 7 days a week, 365 days a year.

All told, we're there for you every step of the way, from the management and distribution of information right down to the printed page.

Call 1-800-PENNANT and we'll send you some more information.

You'll find reducing the amount of stress on your printing system reduces the amount of stress on other, more important systems as well.

**THE INFORMATION IN YOUR  
COMPANY ALSO HAS TO CIRCULATE.  
AND HAS SIMILAR  
CONSEQUENCES IF IT DOESN'T.**

Redefining Printing.™  
**PENNANT**™  
The IBM Printing Systems Company

## Reporter's

## Notebook

The underlying theme of the E-Mail World conference in Boston this month was that messaging — no longer just electronic mail — is growing by leaps and bounds. It seems companies can't come up with upgrades or announce strategic alliances fast enough. And everyone is talking about some sort of connectivity to the Internet.



Unipalm Group in Cambridge, England, announced Version 2.5 of its Mail-It Internet E-mail product. The product offers rules and filtering as core features. Unipalm unveiled Solo, an Internet package that offers server access, front-end Internet connectivity and Internet tools.

AT&T Global Information Solutions and Isocor in Los Angeles announced AT&T Enterprise Messaging, which integrates Isocor's X.400-based Isoplex server with AT&T's directory services and third-party messaging products, such as Lotus' CC:Mail, Microsoft's Mail and Simple Mail Transfer Protocol-based mail. AT&T GIS is offering this as an electronic data interchange (EDI) service.

WorldTalk Corp. in Los Gatos, Calif., unveiled the WorldTalk 400 Directory Service Unit for Hewlett-Packard's Open-

Mail. This service allows OpenMail users to access directories from major LAN-based messaging systems such as Microsoft's Mail, Lotus' CC:Mail and Novell's GroupWise.

CE Software in Des Moines, Iowa, announced that its calendaring and scheduling product, Network Scheduler, will now support OpenMail.

Hewlett-Packard outlined its strategic

direction, which calls for a mainframe-class information infrastructure. This will provide a common directory, message store, security and EDI services across the enterprise.

Several messaging companies pledged support for HP's OpenMail. LinkAge Software, Inc. in Boston announced the availability of LinkAge Directory Exchange for OpenMail. This product, in conjunction with the LinkAge Directory Exchange Manager, provides directory

synchronization between OpenMail and IBM host-based systems.

To help users make sense of all the happenings in the electronic messaging industry, Creative Networks in Palo Alto, Calif., launched a CD-ROM title on the industry called "The E-Mail and GroupWare Industry CD-ROM." It provides a sampling of software that users can consider when trying to set up a messaging system. — *Suruchi Mohan*

# EVERY RE BEGINS DEMONS

## Briefs

### Switch software updated

Bay Networks, Inc. in Santa Clara, Calif., has enhanced its Data Link Switching software to support the Internet Engineering Task Force's Request for Comment 1490 standard for transporting native SNA data over frame-relay networks.

### ATM software licensed

Alantec Corp. has licensed Fore Systems, Inc.'s Asynchronous Transfer Mode management software, called ForeThought, for inclusion in its PowerHub hub family.

### HP develops program

Hewlett-Packard Co. has set up a new Intelligent Network developer's program, an extension of the existing PA-RISC developer's program, aimed at telecommunications companies that design value-added services to run on HP's HP 9000 Unix servers.

### NEC Express RISCserver

Symmetrical multiprocessing

Up to two 150 MHz RISC processors

64-bit V<sub>40</sub> 4400™ MIPS RISC processor

RAID with HOT Swap capabilities

32/64 MB Standard RAM,  
expandable to 512 MB ECC

Powered by dual RISC processors and optimized for Windows NT™ 3.5, the NEC Express RISCserver™ provides unparalleled transaction performance in the SQL server environment.

## CALL 1-800

Offer expires December 31, 1994. RISCserver and See, Hear and Feel the Difference are trademarks of NEC. All other trademarks and registered trademarks are the property of their respective owners.



### Product Focus

**Hughes LAN Systems, Inc.** has announced the Hughes 20/20 Enterprise Hub Manager for Windows 2.1, a PC-based network management system.

According to the Mountain View, Calif., company, the Hughes 20/20 Enterprise Hub Manager for Windows 2.1 incorporates WinSNMP and Windows Sockets

protocols.

Features include graphical management of the enterprise hub, an auto learn function for hub discovery and tools for configuration, performance and fault management. Hewlett-Packard Co.'s OpenView for Windows 7.2 or Workgroup Node Manager is required.

The Hughes 20/20 Enterprise Hub Manager for Windows 2.1 costs \$1,200.

► **Hughes LAN Systems**  
(415) 966-7300

**Pine Mountain Group, Inc.** has announced TraceTool, a protocol analyzer trace-file librarian and format conversion utility.

According to the Groveland, Calif., company, TraceTool lets users of Ethernet and Token Ring protocol analyzers convert trace files back and forth among 14 protocol analyzer file formats.

The TraceTool Librarian module provides automation and protocol information only; the TraceTool Translator mod-

ule includes file-conversion capability.

Prices range from \$295 to \$795.

► **Pine Mountain Group**  
(209) 962-6247

**Motorola, Inc.** has announced the ISDN Basic Rate Interface module.

According to the Schaumburg, Ill., company, the ISDN Basic Rate Interface module supports two switched 64K bit/sec. channels, which can be combined to provide 128K bit/sec. throughput.

A 16K bit/sec. packet-switched channel for access to X.25 public data networks is included. And a bandwidth-on-demand feature brings added bandwidth through an Integrated Services Digital Network (ISDN) connection when needed and relinquishes it when the sessions end or the primary link is available.

Prices start at \$945.

► **Motorola**  
(708) 576-5000

**Hewlett-Packard Co.** has announced the HP AdvanceStack 10Base-T Hub 8U, an eight-port Ethernet hub.

According to the Palo Alto, Calif., company, the HP AdvanceStack 10Base-T Hub 8U provides users with an upgrade path to Simple Network Management Protocol.

The product features eight ports with RJ-45 connectors and one recessed transceiver slot for attaching optional fiber, unshielded twisted-pair cable or a coaxial transceiver module to a network backbone.

The HP AdvanceStack 10Base-T Hub 8U costs \$299.

► **Hewlett-Packard**  
(415) 857-1501

**Funk Software, Inc.** has announced WanderLink, remote-access software.

According to the Cambridge, Mass., company, WanderLink lets remote PC users dial in over standard lines to a Novell, Inc. NetWare network.

Security features include NodeID, data encryption and domain filtering. The product provides software compression and lets users become a node on a network with access to file servers, electronic mail and printers. Users can also take over and operate any PC on the LAN.

Prices range from \$295 to \$1,695, depending on the number of ports.

► **Funk Software**  
(617) 497-6339

**Olicom USA, Inc.** has announced the Olicom PCI adapter, a Token Ring Peripheral Component Interface (PCI) adapter.

According to the Plano, Texas, firm, the Olicom PCI adapter can achieve data transfer rates of up to 133M byte/sec. and was designed for networks using multimedia applications.

The adapter provides plug-and-play performance for servers and workstations at either 4M or 16M bit/sec. and features a Flash Remote Program Load utility that lets diskless workstations boot directly from the server.

The Olicom PCI adapter costs \$580.

► **Olicom USA**  
(214) 423-7560

# VOLUTION WITH A TRATION.

## RVER FOR 60 DAYS FREE.

Witness this demonstration of power and performance through our 60-day free trial. No strings attached. Call now to arrange for delivery. Like every revolution, it will change your world.

### - 709-3434

SEE, HEAR  
AND FEEL THE  
DIFFERENCE.™

## NEC


Technology, Inc. Vx4400 is a trademark of NEC Electronics, Inc. Windows NT is a trademark of Microsoft Corp. property of their respective owners. ©1994 NEC Technology, Inc.



Novell



IBM



Microsoft

**NETWORK USERS.  
THE VOTE IS IN.**

*IDC Jan-June 1994  
Server Network Operating  
Systems Node Shipments\**  
Novell: 72% / Banyan: 7% /  
Microsoft: 7% / IBM: 7% /  
DEC: 3% / Other: 4%

**Quick,  
who has a next  
generation  
network that's  
rock solid today?**

**(Hint: it's not IBM or Microsoft.)**

**E**verybody boasts about what their network operating systems could become. But talk, as they say, is cheap. So instead of jabbering about fanciful future plans, let's take a look at the current facts. Fact number one is that networking today encompasses more than just file and print. Number two, is that basic file and print are just about all IBM and Microsoft can offer right now. (And even those aren't up to NetWare standards.) Which leads us directly to the clincher: there's only one network that's complete, proven and ready to go now and that's NetWare 4.

---

**"ALMOST" DOESN'T COUNT  
IN NETWORKING.  
(SORRY IBM & MICROSOFT)**

---

What the other guys want you to buy is little more than a promise to provide a full service network operating system somewhere down the road (the high-tech version of "the check is in the mail"). Or maybe they'd like to point you to a third party vendor. But that's not enough to run the network you need today.

So why isn't it enough that IBM and Microsoft offer basic file and print services and little else? Because networking today encompasses much more than those services and local work groups. In fact, networking today has evolved to create a distributed network that speeds timely information directly to the people who need it. At the moment they need it most. Networking today means salespeople on portable computers can let the home office know what's up with sales in Dubuque. In minutes instead of weeks. It means a key player on the road can keep collaborating with folks at home to get that business plan in the banker's hand tomorrow. Feats like these require 32-bit NetWare 4, not just a promise.

---

**555 DAYS UP, 0 DAYS DOWN:  
ONLY NETWARE 4 IS A PROVEN  
PRODUCT TODAY.**

---

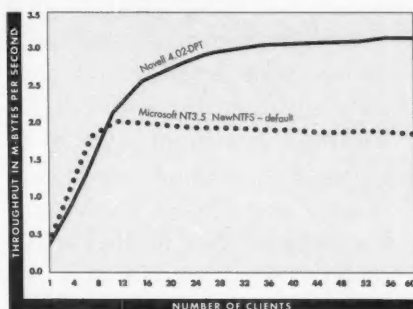
NetWare 4 doesn't just talk about great services, it actually delivers them. Now. And there's nothing like months of solid performance and happy users to prove it. Folks tell us NetWare 4 is a product they can count on today as well as tomorrow. Others report that it has

given them stability and performance and has proven itself in business critical applications. But the comment we hear most is that, quite simply, NetWare 4 is doing everything they need it to do. And that's good enough for us.

## WHAT WE'VE GOT THAT THEY DON'T. THE 7 SERVICES EXPLAINED.

The reason our users are so happy is that we offer them the 7 services they need to hook up with people and information anytime, anywhere. The other guys can only give you 2 of those services right now. The chart to the right shows you who offers what. Here's the scoop on what the 7 services can do for you.

We'll start with the directory service. In a nutshell, it means no more looking for data in all the wrong places. NetWare 4's directory service keeps track of all network users, servers, and resources. Even on large internetworks that use wide area network links. And because it offers centralized administration and management of an entire distributed network, you simply log in to the network once to get the info you need the moment you need it.



Source: PC WEEK 11/14/94. NetBench 3.0 was used to measure average throughput.

With results like these, it's no wonder PC WEEK calls NetWare "the speed demon of file and print services."

Built-in messaging lets you use most of the popular groupware packages such as E-mail, calendaring and others. And because it uses the same directory as the network operating system, you're blessed with a single-point-of-administration that saves you time and money.

Multiprotocol routing with NetWare gives you software-based routing (no new hassles, no new hardware) for connecting your network with the rest of the world. That way, you get the info you need anytime, anywhere, and you can collaborate

with anyone, anywhere.

Network management with NetWare 4 lets you manage your entire network from a single-point-of-administration. And our graphical MS Window's

## NEXT GENERATION NETWORK SERVICES. READY OR NOT?

Services	Novell NetWare 4	Microsoft NT Server 3.5	IBM LAN Server 4.0
1 Directory	Yes.	No	No
2 Integrated Messaging	Yes.	No	No
3 Multiprotocol Routing	Yes.	No	No
4 Network Management	Yes.	Limited	Limited
5 Security	Yes.	Limited	Limited
6 File	Yes.	Yes.	Yes.
7 Print	Yes.	Yes.	Yes.

management tools reduce repetitive, multi-step tasks to a simple click of a mouse.

Security with NetWare 4 allows administrators to control access to sensitive information within a distributed environment. In fact, it was designed to meet the National Computer Security Center's Class C2 Network Security criteria.

And last but not least, file and print. Only NetWare 4 offers data migration, suballocation and compression so you won't have to buy extra hardware like the other vendors require. Simply put, our file and print services beat IBM and Microsoft cold on both performance and cost.

## NOVELL'S SUPPORT ENGINEERS OUTNUMBER MICROSOFT'S 50 TO 1. WHO WOULD YOU RATHER CALL FOR HELP?

Buy NetWare 4 and when you call for help you'll get answers, not a runaround. Only Novell has over 47,000 Certified Novell Engineers (and 60,000 more in training) working with 20,000 Novell authorized resellers. Not to mention a veritable arsenal of everything from technology and solution partners to systems consultants and integrators. The point is, we don't sell you the product and disappear.

## NETWARE 4 ISN'T JUST EASY, IT'S VIRTUALLY RISK-FREE.

It's true. In fact, no other migration path is this

easy and risk-free. On top of having the same basic architecture we've always had, NetWare 4 also features built-in migration tools so you can upgrade now. Backward compatibility to NetWare 3 means that applications written for NetWare 3 run on NetWare 4. And because you can manage NetWare 3 from a NetWare 4 server you can transition at your own pace. Installation is more hassle-free thanks to NetWare 4's simple install option. Even administration is a breeze because NetWare 4 lets you make all those routine, repetitive tasks in one intuitive step.

## BUT WAIT, THERE'S MORE. HOW DOES A 300% RETURN ON INVESTMENT AND A FREE UPGRADE SOUND?

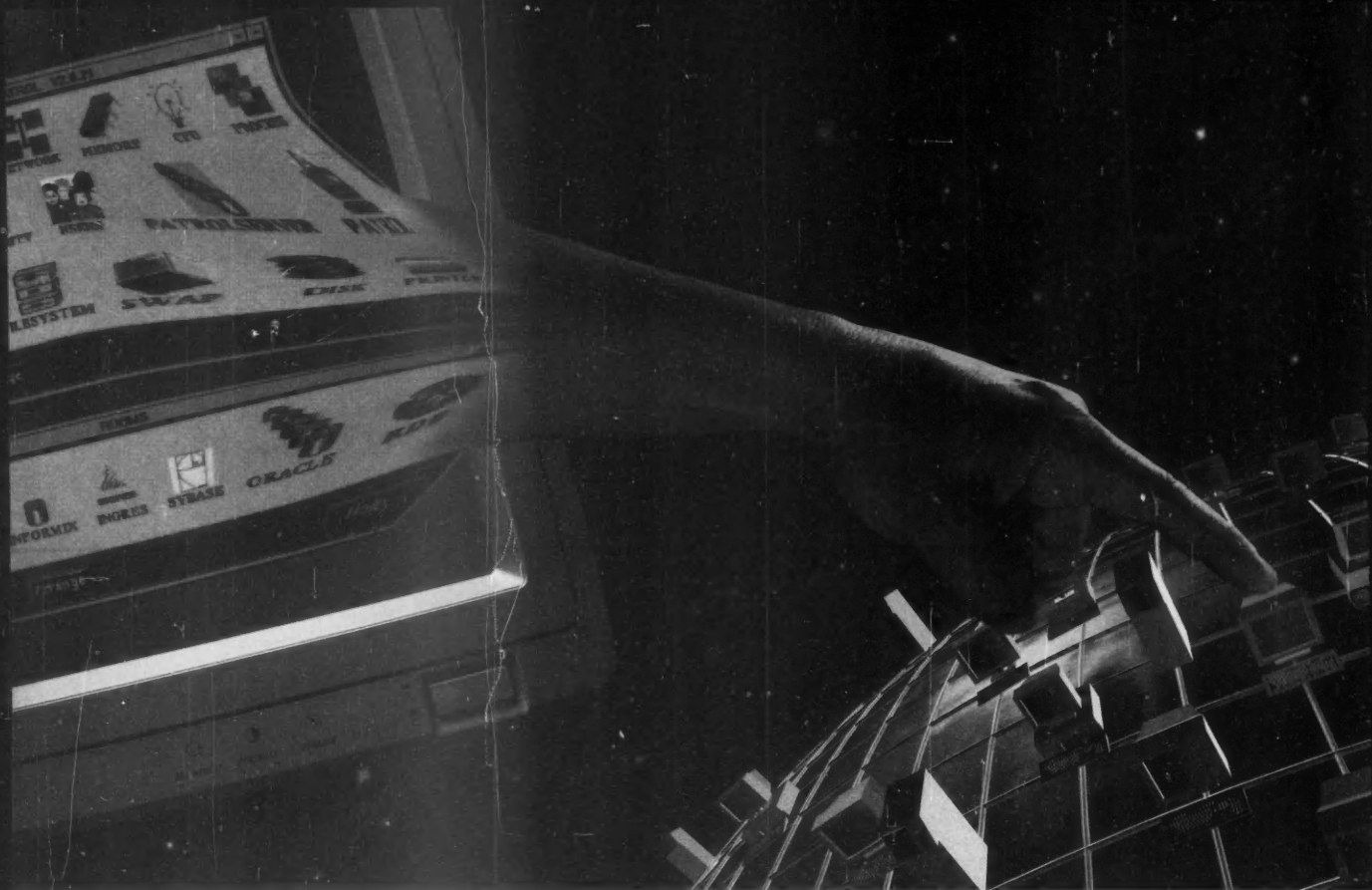
Fewer hassles mean fewer dollars. Research shows that approximately 70%\*\* of the cost of a network is administering and managing the network and its applications. By simplifying the administrative load, NetWare 4 slashes the cost of administering your network by roughly 25%†. Customers who added these savings to those garnered by eliminating additional hardware expenses have reported up to a 300% return on their investment in NetWare 4. Better yet, if you buy 4.02 now we'll upgrade your network operating system free through March, 1995. What a deal.

## PROOF, PROOF POSITIVE, AND MORE PROOF. OUR FREE BROCHURE.

We're so sure that the facts speak for themselves that we've filled an entire brochure with them. In it, you'll discover that the way we stack up against the competition is truly impressive. And that the product we've built over the past 11 years is proven. Our brochure should leave no question that there's only one network to go with now, and you can read all about it by calling 1-800-554-4446.

**NOVELL**

**NetWare 4**  
The only network ready for tomorrow, today.



# PATROL puts you in control.

Total control. Of applications, databases, networks and your entire computing environment. PATROL is the industry's first general purpose automated management tool for open-systems environments.

Only PATROL gives you control for today and tomorrow. Off-the-shelf management of all leading UNIX systems, platforms and databases – Oracle, Sybase, Informix, Ingres and Rdb. And *unlike other systems*, its customizable open architecture lets you manage any application, even in-house programs.

Intelligent agents automatically manage events and, if they can't correct a situation, alert you **BEFORE** a problem gets out of hand. When you need to take action, PATROL's intuitive object-based architecture lets you drill down for details and choose the best course. Either way, you're always in control.

We'll be glad to put you in control today. Just call BMC Software and ask about our free PATROL trial program. **800 278-4262** or 713 918-8800.

**BMC**<sup>®</sup>  
SOFTWARE



# Large Systems

"WHEN ONE IS PERSONALLY  
FUNDED BY A BILLIONAIRE, IT'S A  
BENEFIT."  
— GARY SMABY, THE SMABY GROUP, IN  
REFERENCE TO NCUBE (SEE BELOW)

Richard Finkelstein

## When OLAP does not relate



Ten years ago, E. F. Codd opened a Pandora's box when he presented the radical view that relational databases may be more appropriate than the then-popular hierarchical and network databases. A similar debate is now developing around on-line analytical processing (OLAP). Some say relational databases can satisfactorily support OLAP, but I am among those who say they cannot.

Codd, the father of relational technology, crafted the term OLAP, which refers to a class of applications that allow analysts to interactively examine and manipulate large amounts of consolidated and detailed data from many perspectives. OLAP applications let analysts drill down into data, pivot perspectives, perform trend analysis and time comparisons and statistically analyze relationships among numerous pieces of interrelated data.

There is a growing consensus that multidimensional databases (MDD), which store data as cubes within cubes as opposed to two-di-

Finkelstein, page 72

## MasPar, NCube carve out divergent parallel paths

By Craig Stedman

■ Following the strong doses of frontier justice handed out to some of massively parallel processing's (MPP) pioneers this year, two of the smaller survivors are striking out along different trails toward the commercial markets that could promise continued safe passage.

MasPar Computer Corp. is pursuing a niche strategy for large-scale decision-support applications involving more than 100G bytes of data. The Sunnyvale, Calif., company will use a relational database introduced at last week's DB/Expo '94 specifically for its MP-2 systems, and MasPar executives said they have no plans to go after transaction processing business.

On the other hand, NCube wants to use its recently introduced NCube 3 machine and its connections to database powerhouse Oracle Corp. as well as Amdahl Corp. and other big companies to make a name for itself first in mainstream decision support and eventually in transaction processing.

"We're very small and could get squished like an ant if [a larger vendor] decides to have a fight with us," conceded Chris Marino, director of product marketing at NCube in Foster City, Calif. "But hopefully the deals that we've signed will help us."

MasPar and NCube each had annual sales of about \$20 million last year. But analysts noted how being owned by

Larry Ellison, Oracle's chief executive officer, has made it easier for NCube to avoid the financial wolves that forced Thinking Machines Corp. and Kendall Square Research Corp. out of the MPP hardware business within a month of each other last summer.

"MasPar has had to scale back its vision, but I think NCube is scaling its up," said Gary Smaby, president of The Smaby Group, Inc., a consulting firm in Minneapolis. "When one is personally funded by a billionaire, it's a benefit."

NCube can also get around its lack of name recognition by turning to both Oracle, which can point customers to the MPP vendor, and Amdahl, which is marketing a bundled NCube/Oracle database server to its mainframe accounts. MasPar is more on its own these days after an earlier marketing deal with Digital Equipment Corp. "pretty much wound down" due to Digital's financial problems, Smaby said.

### Decisions, decisions

MasPar's Decision Series is scheduled to be installed at an initial beta site this week

Processors:	1,024
Maximum performance:	4,250 MIPS
RAID 5 storage:	20G bytes
I/O transfer rate:	15M byte/sec.
Communications bandwidth:	64M byte/sec.
List price:	\$630,000

### Edging its way in

Even with Digital's involvement, MasPar had a tough time persuading one of its first decision-support customers to sign on the dotted line despite strong benchmark results against an existing mainframe. "There were some doubters because of MasPar not being a household name," said Bruce Tyshynski, MPP project adviser at the British Columbia Ministry of Health in Vancouver.

The ministry eventually did buy an MP-2 to handle 40G MasPar, page 73

## Legent client/server link targets staffing costs

By Steve Moore

Continuing its quest to extend mainframe systems management capabilities into the client/server world, Legent Corp. recently unveiled an integrated event scheduling package and ported its Prevail/XP Automation Point systems management product to Hewlett-Packard Co.'s HP/UX.

Legent's move was designed to reduce staff costs by helping users integrate and centralize the management of mainframe and client/server environments.

"The amount of staff time we save will be measured by how much automation the Legent products will provide," said Peter Falzarano, an automation engineer at the Medical Center of Delaware in Newcastle, Del. While Legent's move into client/server management is "a match made in heaven for us, it's a new world for them. We don't know yet how much time and personnel it will take to manage the wide range of client/server and mainframe applications we need to get under control," he said.

With Legent's new event scheduling application, called Prevail/XP-Jobtrac Remote, running on an IBM RS/6000, "it's very productive to have the ability to schedule MVS and AIX events from one workstation," said Tom Miller, an operations development consultant at American Greetings Corp. in Cleveland. Jobtrac Remote masks drastic differences in the command languages used on IBM AIX and MVS systems, Miller said, letting him know immediately when a problem occurs in either environment.

### Keeping promises

"Legent is continuing to deliver on its promise to make the Prevail products cross-platform, and users will see more Legent products coming out that support multiple platforms," said Paul Mason, resource manager for enterprise systems management at International Data Corp. in Framingham, Mass.

Prevail/XP Automation Point, which previously ran on OS/2 and now runs on HP/UX, typically is used in conjunction with Legent's mainframe-based Pre-

vail/XP Automation running on MVS or VM. While users do not have to have a mainframe to use Legent's Prevail products, Mason noted, Legent will be most successful in companies with centralized information technology resources.

"In companies that have a more anarchistic model, the culture tends to reject the centralized approach," Mason said.

He said another key question is whether users will prefer systems management product suites such as those from Computer Associates International, Inc. and Boole & Babbage, Inc. or will "build their own [suites] within a framework like Legent's."

"We know central [information technology] users well, and now we are get-

ting to know departmental users," said Suzanne Nicastro, vice president of Legent's operations management business unit. Although central

information technology groups have lost power in the past five years, she noted, some companies are asking them to support enterprisewide systems management by taking on client/server systems management tasks.

Pricing for Prevail/XP Automation point for HP/UX, which will be available in early 1995, is based on the number and size of connec-

tions and devices to be managed. Prevail/XP Jobtrac Remote includes a license fee of \$41,200 for the base Prevail/XP Jobtrac product, plus \$1,000 to \$5,000 per remote agent.

### What's on deck

The following are new Legent products and their functions:

**Prevail/XP-Spool:** Allows users to print on remote printers connected via TCP/IP.

**Prevail/XP-View:** Allows users to view on-line reports on 3270 terminals.

**Prevail/XP-Deliver:** Supports report selection and analysis in MVS environments.

**Prevail/XP-Connect:** Supports bidirectional report distribution between mainframes and LANs.

**In Database  
Technology,  
Mission-Critical  
Has Been Mission  
Impossible.**

# Until Now. Introducing CA-OpenIngres.

## CA-OpenIngres. Advanced Technology. Mission-Critical Experience.

While other companies promise database technology you can trust for mission-critical client/server applications, only one company delivers.

**Total Replication**  
**Transparent Gateways**  
**Client/Server**  
**Open Architecture**  
**Fully Scalable**  
**Object Relational DBMS**  
**Dynamic Triggers**  
**24/7 Support**

Computer Associates. With the introduction of CA-OpenIngres®, we've combined the industry-leading technology of OpenIngres with our own unmatched experience in mission-critical heterogeneous computing.

It's a combination that turns the dream of global, enterprise-wide information management into reality.

A feat CA-OpenIngres accomplishes by combining the robustness of classic production systems with the economy and flexibility of open systems.

The result is a single, logical view of disparate data whether it be relational, non-relational, local or distributed.



*Computer Associates  
offers 24 hour/7 day a week  
service and support.*

And with our leading-edge Object Management Extensions, you're not just limited to text and numbers.

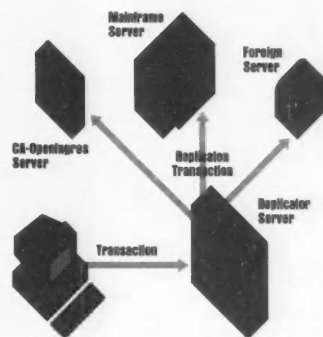
OpenIngres allows you to develop your own business data types like times, dates, audio, video and other multimedia.

What's more, now that OpenIngres is

CA-OpenIngres, product support will never be in doubt. Because Computer Associates is the only database company that includes technical assistance 24 hours a day, seven days a week standard, at no extra charge.

**For More Information On The Advantages Of  
CA-OpenIngres, Call 1-800-225-5224, Dept. 12102.**

CA-OpenIngres. In database technology, mission-critical is now mission accomplished.



*Foreign servers take part in replication,  
for integration of CA-OpenIngres systems with  
existing production systems.*

UNIX

VMS

NETWARE

OS/2

WINDOWS NT

**COMPUTER  
ASSOCIATES**  
*Software superior by design.*

### Finkelstein

CONTINUED FROM PAGE 69

mensional tables, are important for implementing OLAP applications. Some analysts say RDBMSs are adequate — or will be adequate at some future time — for OLAP.

However, I believe the base data must be organized in MDDs to achieve optimal support for OLAP applications. MDDs were designed to support OLAP, just as RDBMSs were designed to support online transaction processing (OLTP).

In many ways, MDDs are a natural database server extension of the spreadsheet model. MDDs come equipped with an extensive set of built-in functions to support common OLAP operations such as consolidation, drill-down and time analysis operations. MDDs perform — right in the server — complex, cross-dimensional calculations that are as essential to OLAP applications as stored procedures and triggers are to OLTP applications.

#### Too much raw data

Without this capability, the complex operations would have to be performed in outside front-end applications, several of which currently try to transform raw relational data into a multidimensional form for each user query. The problem with this approach is that large amounts of raw data must be continually transferred from the RDBMS to the front-end application. Transferring that raw data saturates the network and overloads the front-end application, which is typically sitting on a workstation.

An alternative is to put the OLAP front-end application on another server. Functionally, it acts like an MDD, but instead of storing the base data in a multidimensional form, it uses back-end relational data to store raw data.

This approach off-loads work from the workstation but does not address the network overload problem. Performance is substantially impacted because the front-end application needs to constantly access RDBMS data and then dynamically transform it into a multidimensional format.

From talking to business analysts, I have learned that MDDs are easier to use than RDBMSs. This is not surprising because desktop spreadsheets are far easier for end users to understand than desktop RDBMSs. One of the primary problems with RDBMSs is that it is easy for a business analyst to generate a SQL query that returns incorrect results unbeknownst to the analyst. Incorrect results are often a manifestation of incorrectly specified database joins, subqueries and correlated queries.

Because an MDD is constructed as a single, multidimensional object, there is no notion of joins and subqueries. It is therefore a more natural form for users and less prone to such errors.

Several issues have to be addressed within the MDD community. Each MDD has its own proprietary API, which makes it difficult to build tools that oper-

ate across different types of MDDs.

Periodically refreshing large amounts of MDD data can become an operational issue. Extract and load programs might have to be run over a weekend or once a month. It would be better to have the MDD database updated more frequently and with less manual intervention.

MDD databases typically do not store each individual data record. If a business analyst needs to look at the original records, he must go to the original rela-

tional database source. MDD vendors have announced their intention to build direct links from the MDD data to relational data. However, these facilities are not yet available.

The substantial goodwill the MDDs have built in the customer base leads me to believe that MDDs will grow quickly. Even those who believe that RDBMSs can ultimately compete against MDDs are forced to concede that this will not happen for several years. For now, there

is a need to better support OLAP applications.

MDDs are here today and provide a substantial benefit with minimal cost. They do an excellent job of complementing RDBMS technology and are worth a look.

Finkelstein is president of Performance Computing, Inc., a Chicago consultancy specializing in client/server technology. He can be reached by CompuServe at 72240.2536.



IBM, DB2 and AS/400 are registered trademarks and DB2/2, CICS and CICS OS/2 are trademarks of International Business Machines Corporation. UNIX is a registered trademark of UNIX Systems Laboratories. ©1994 IBM Corp. All rights reserved.



## MasPar

CONTINUED FROM PAGE 69

bytes of data stored in flat files.

But John Harte, MasPar's president and CEO, acknowledged that the company's new Decision Series database engines will have to outperform bigger vendors such as AT&T Global Information Solutions and Tandem Computers, Inc.

by a wide margin to give customers the incentive to take a risk on a relative unknown.

Harte said his goal is to be at least 10 times faster than the competition with the Decision Series, which bundles MP-2 hardware with the Decision DB database developed for MasPar by a software firm in Indiana. MasPar hopes to sell seven Decision Series machines next year and push its annual revenue from the \$20 million mark to about \$30 million, he added.

MasPar is looking to get some marketing help from alliances with Electronic Data Systems Corp.'s EDS/dbIntellect unit and software vendors Prism Solutions, Inc. and Business Objects, Inc. It also expects to sign a deal shortly with a third-party firm to handle commercial customer service, Harte said.

The first NCube 3 model will target scientific users when it ships in the second quarter of next year because its \$500,000 starting price is "pretty high-ticket," Ma-

rino said. But versions costing \$100,000 to \$300,000 should be ready for the database and video server markets about three months later.

### Doubling dollars

NCube will compete with symmetric multiprocessing vendors for decision-support business of 20G bytes of data up. It also plans to get into transaction processing by the end of next year, once the NCube 3 has better reliability, Marino said. He added that sales are expected to "more than double" both this year and next, which would move NCube into the \$100 million range.

### Looking ahead

Both MasPar and NCube hope to join the ranks of the profitable next year, according to executives. MasPar is "just under profitability right now" following layoffs and other cost-cutting moves during the past year, said John Harte, president and CEO. NCube had hoped to get out of the red this year, but it still is not "consistently profitable," said Chris Marino, director of product marketing at NCube.

However, it remains to be seen whether NCube or MasPar can get more than "nips and tucks" around the edges of the [commercial] market," said Terry Bennett, a partner at The Bennett Co., a consulting firm in Portland, Ore. "Finding a few strange places where you can sell systems is one thing, but being part of the mainstream is another."

## MOVING TO CLIENT/SERVER: THE ADVANTAGE OF BRINGING YOUR TOOLS WITH YOU.

**DB2/2™ and CICS OS/2™**  
bring familiarity and  
reliability to the PC  
LAN environment.

Now you can extend your most critical applications to a multi-platform environment with confidence. With DB2/2 and CICS OS/2 you can protect your investment in existing applications, development skills, and host data.

### The DB2/2 Advantage

DB2/2 provides high performance, availability and functionality, so you can run complex, mission-critical applications. Plus, it has the recovery features you've come to expect from DB2®.

### The CICS OS/2 Advantage

CICS OS/2 delivers end-to-end integrity, ensuring that transactions are completed successfully. It can also

help you manage a Client/Server environment by coordinating resources, both inside and outside the LAN.

### The IBM Advantage

Take your existing DB2 and CICS™ applications to a PC LAN environment with minimal effort. Applications developed using DB2/2 and CICS OS/2 can be extended to a growing list of

environments including UNIX®, AS/400® and your IBM mainframe as needs demand. So you can run your applications wherever it makes sense to improve data

access and system performance.

And if you ever need assistance, you get it quickly and directly from one knowledgeable source.

To order or receive additional information, please telephone 1 800 IBM-CALL, Dept. SA036, in the U.S. or 1 800 465-7999, Dept. 698, in Canada. Or contact your local IBM representative.

	DB2/2 and CICS OS/2
End-to-end transaction integrity.	✓
Data recoverability/integrity.	✓
High availability.	✓
Support GUI interfaces.	✓
Familiar tools for database management and application development.	✓
Single contact for support for both database and transaction manager.	✓

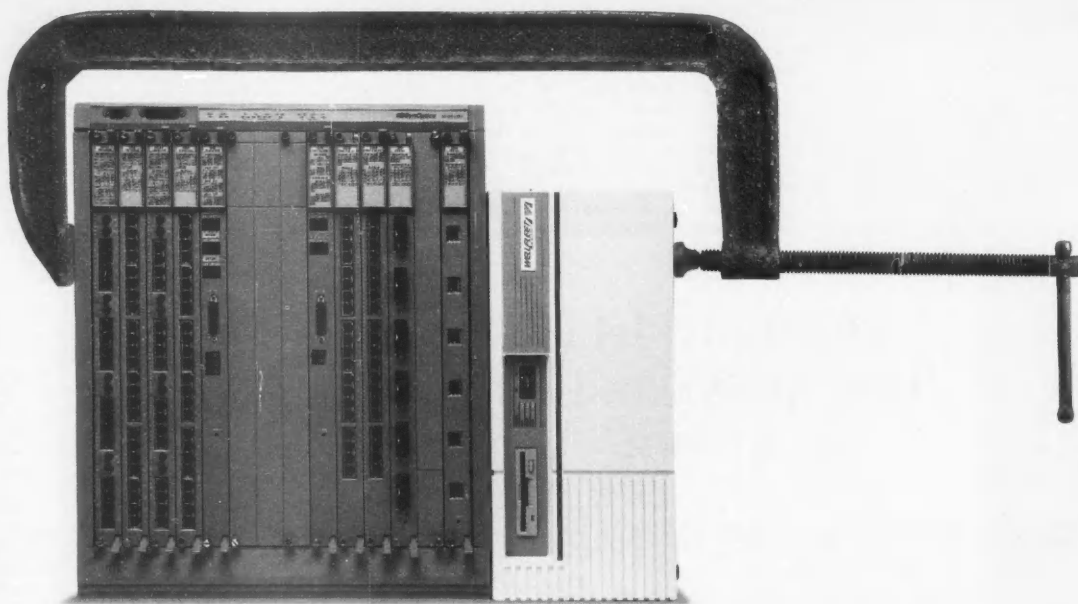
## Briefs

### Compass adds outsourcing

Compass America, Inc. in Reston, Va., last month announced an outsourcing analysis service designed to benchmark information services provided by third-party companies. Information service operations that Compass will analyze include the following: client/server computing environments, wide-area networks, mainframe data centers and application development. The cost of the service ranges from \$30,000 to \$100,000, depending on the size and complexity of the analysis.

### Hyatt buys Sequent system

Sequent Computer Systems, Inc. said Hyatt Hotels Corp., a long-time user of Pyramid Technology Corp. Unix systems, will use Sequent Symmetry 5000 to enhance existing systems and help Hyatt's Regency Systems Solutions provide reservation and database services to the lodging industry.



# MERGING TECHNOLOGIES

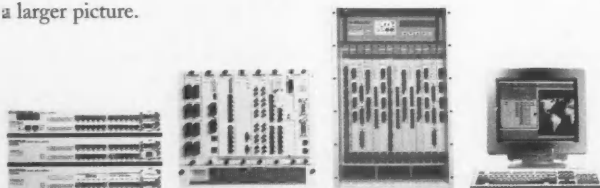
Hub and router technologies are merging. Network management is no longer an option. ATM and packet switching will soon make virtual networking a reality. Let's face it, the networking industry is changing. And while those in the industry with incomplete solutions scramble to acquire the pieces they're missing, one company is already putting the puzzle together. That company is Cabletron Systems.

Our singular vision has enabled us to develop the products and services your company requires today, and will desire tomorrow. Products that are not made obsolete with the introduction of newer ones. Products that fit the plan, grow as you grow, and become part of a larger picture.

A big part of that picture is your right to choose the internetworking vendor that's right for you. That's why we're fanatical about open systems and industry standards. And to be sure that our vision matches yours, we work directly with you when developing new products, with the largest direct sales and support organization in the industry.

Why wait for the vendors who are still trying to figure out their own companies' direction. Check out Cabletron Systems: the networking vendor dedicated to your company's direction.

Call (603) 337-2705. And ask for your free, informational MMAC-Plus CD ROM presentation.



**CABLETRON**  
systems  
The Complete Networking Solution™

**ONE COMPANY.  
ONE VISION.**

# EMERGING TECHNOLOGIES



# PowerBuilder® Developers: Which Powersoft™ Cares About You?

**"We view the '90s as different from the '80s...customers relish being able to mix and match suppliers."**

— David Litwack, President  
Powersoft Corporation  
*Powerbuilding Enterprise Applications*  
Datamation Magazine  
15 July 1993

**"Users want a one-stop shop, a single vendor to provide most of the pieces for client/server computing."**

— David Litwack, President  
Powersoft (soon-to-be-a-division-of-Sybase) Corporation  
*Sybase-Powersoft merger creates one-stop shop for client/server tools*  
PC Week  
21 November 1994

## Upgrade to SQLWindows 5.0!

### **Our database-independence keeps you free.**

Don't worry, Gupta gives you choice! Our native routers to Oracle®, Informix®, AS/400®, HP®, Ingres®, and, yes, Sybase® have connected to all with equal performance and ease since 1990.

### **Don't risk a Powerfailure with Oracle and Informix.**

If you use Oracle, Informix or other non-Sybase databases with PowerBuilder, **upgrade to SQLWindows® 5.0 Corporate Edition instead of PowerBuilder 4.0**, and avoid a risky powerfailure. That's right, upgrade to SQLWindows, the tool PC magazine said "...continues to set the standards for Windows-based client/server tools..."



### **Get the same upgrade deal as our preferred customers.**

Upgrade by December 23rd for just \$995.00 — the same price SQLWindows 4.1 developers pay to upgrade to SQLWindows 5.0! That's \$2,000 off the list price of SQLWindows Corporate Edition. Proof of PowerBuilder ownership required for each upgrade of SQLWindows Corporate Edition ordered. Upgrade Now to SQLWindows 5.0 for \$995.00.



## **GUPTA™**

THE POWER TO GET  
CLIENT/SERVER DONE

©1994 Gupta Corporation • 1060 Marsh Road, Menlo Park, CA 94025 • 415/321-9500 • Fax: 415/321-5471 • Quest, SQLBase, SQLGateway, SQLRouter, SQLHost and SQLTalk are registered trademarks of Gupta Corporation. SQL/API, SQLNetwork, SQLConsole, QuickObjects, Fast Facts, Gupta and the Gupta Powered logo are trademarks of Gupta Corporation. SQLWindows is a registered trademark and TeamWindows, ReportWindows and EditWindows are trademarks exclusively used and licensed by Gupta Corporation. Other trademarks are the property of their respective owners. Quotes reprinted from "DATAMATION" July 15, 1993, ©1993 Carners Publishing Company and "PC WEEK" November 21, 1994, ©1994 Ziff Davis Publishing Company L.P.



# Application Development

THREE-TIER ARCHITECTURES ARE  
NOT FOR THE FAINT OF HEART.  
— PETER KASTNER  
ABERDEEN GROUP  
(SEE STORY BELOW)

## Developers extend user support with PowerBuilder

By Melinda-Carol Ballou

While some users of Powersoft Corp.'s PowerBuilder development tools complain about the challenges of creating high-end applications, a small number of innovative developers are stretching the range of PowerBuilder capabilities to support as many as 700 users.

Bo Swanson is systems development manager at United Behavioral Systems (UBS), a Minneapolis-based managed behavioral health firm network of 32 outpatient clinics and case management offices that provides services for more than 2 million patients. UBS is a subsidiary of United Healthcare Corp.

Swanson's group created a three-tier client/server application using PowerBuilder in conjunction with Open Environment Corp.'s development tools and the Open Software Foundation's Distributed Computing Environment (DCE) remote procedure calls (RPC).

One application, dubbed Provnet, that UBS developed will soon support roughly 700 users, Swanson said. An administrative application at UBS supports roughly 400 users, as will a

case management system UBS is developing.

Provnet manages client cases, which involves providing a patient and provider information system, Swanson said.

Provnet's query system allows UBS employees to look up providers who meet certain requirements, such as a doctor who speaks Bulgarian, works in a specific region and has experience in an appropriate specialty. Provnet also runs background checks on doctors' credentials.

### Spanning the states

Provnet spans states from Florida to Wisconsin to Utah and replaces an arcane and cumbersome system that was primarily paper-based.

"We needed to be able to scale the applications to a large number of disparate users," Swanson said. The database size can grow to 10G bytes because case notes must be retained for up to seven years by law, he added.

Swanson's group, therefore, used PowerBuilder as a front end, created a middle tier

PowerBuilder, page 80

## PowerBuilder apps

While United Behavioral Systems had the largest deployed Powersoft PowerBuilder application of companies interviewed by *Computerworld*, Transco Energy Co. in Houston used PowerBuilder to re-engineer a mainframe application to a client/server setup that supports about 120 users.

Transco created a complex Gas Marketing Administration System comprising 14 modules, five of which are in production, according to Inja Chun, manager of merchant IS at the company. The application lets users share the firm's administrative information across departments and platforms. The system will support functions such as billing, gas purchase payments and transportation.

Chun said the DataWindow feature of PowerBuilder was helpful. DataWindow provides

SQL objects, allowing developers to access database information without writing SQL code.

"Talking to other developers, I've found that the complexity of what we are doing is actually 'bleeding edge.' Not many have developed this kind of distributed application," Chun said.

A major health management organization in Sacramento, Calif., is also developing a PowerBuilder application, which will be deployed to 2,000 users, although less than 20 are now on the system, said Ross Santos, a consultant at the company.

Santos will determine, along with other architects for the application, which tools to use to create the middle and top tiers of the system. He said he expects it to be deployed gradually among his organization's user base in the next nine months.

—Melinda-Carol Ballou

## Symantec upgrade gets user OK

By Rosemary Cafasso

Early users of Symantec Corp.'s upgraded application development platform last week said it includes needed performance boosts as well as some helpful new functions.

"It is more responsive," said Eric Lau, director of information systems at Ontario Store Fixtures in Weston, Ontario, which began testing Enterprise Developer Version 2.0 just two weeks ago. "Say I want to bring up a table for manipulation or editing. It used to be a 15- or 20-second wait. Now it's three or four seconds."

Version 2.0, officially launched last week, includes some tweaking as well as new capabilities, such as caching, that boost overall performance.

In addition, Symantec included a Data Migration facility to move data from one database to another and some basic partitioning techniques, including the ability to generate database triggers on the server. Partitioning lets users develop applications as modules and deploy them on different systems on the network.

With Enterprise Developer, Symantec competes at the lower end of the applications development market against such players as Powersoft Corp. and Gupta Corp., analysts said.

"If you are in development and moving to production, Database Migration will

be very helpful," said Jeff Reiter, IS manager at Hill, Steadman & Simpson, a Chicago law firm, and another recent user of Version 2.0.

Reiter said "the big things aside," he was also impressed with the basic clean-up that Version 2.0 provided over Version 1.1. "It wasn't super buggy, but they have added a lot of small features based on user feedback."

Lau said he is also looking forward to using the Database Migration.

"We were having difficulty with 1.1," Lau said of earlier attempts to move database files. "It doesn't port everything over to another server."

### Good reviews

Chet Geschickter, an analyst at Hurwitz Consulting Group, Inc. in Watertown, Mass., said that with Version 2.0, Symantec is doing a good job with its repository-based approach to development. The Symantec repository stores business rules and data models.

"The product really is a merger between the business rules-driven approach and the more accessible, client-based systems," Geschickter said.

The repository approach is what sold Brian Vickery, a systems analyst at Fluor Daniel in Greenville, S.C. "I've seen products with great repositories but poor Windows design [capabilities]. This one seems to do both."

## Program takes guesswork out of discount decisions

By Mitch Betts

When airlines decide on a price for a passenger ticket, they use yield-management systems full of optimization algorithms.

When clothing retailers decide to discount the price of an item, they use some combination of rule of thumb and educated guess.

Now, a University of Florida researcher has developed prototype software with an optimization algorithm that will add more science to the retailer's art. The decision-support system helps a retailer decide when and how much to mark down product prices to reach the retailer's profit or inventory goals.

In essence, historical sales data, sales forecasts and even the retailer's intuition are plugged into the model, which is called Mark. It then calculates the price

trajectory needed to reach the goal, such as eliminating end-of-season inventory.

For example, Mark will suggest that the item be sold at full price for a week, then be marked down 30% the following



A powerful algorithm can help retailers decide when to cut prices and by how much

week, 20% the next week and so on.

"The model makes use of what the retail buyer already knows but computes many more scenarios of what could happen

Discounts, page 81

Does a

BIGGER marketing

*Sapiens IDEO™ allows you to develop applications for the growing number of platforms and databases in your*

© 1997 Sapiens International, Inc. All rights reserved. SAPIENS INTERNATIONAL CORPORATION NY



Application Development Software

## department really make for a better product?

**HYPE** is a powerful thing. It can make the ordinary seem extraordinary. It can make products that have real limits seem desirable. And blind you to ones that can make you more productive. Hype can keep you from learning that Sapiens Ideo works with more platforms and databases than the application development products that you keep hearing about. (Platforms from mainframes and minis to Unix and Windows.<sup>™</sup> Databases from Oracle<sup>®</sup> and Sybase<sup>®</sup> to Informix<sup>®</sup>. Just to name a few.) Hype can make you think that something developed to work with what you have now is an acceptable product. And make you forget how quickly your environment changes. Hype can make you ignore Sapiens Ideo and sell you on products with high-priced marketing budgets. Hype is like that.

*changing client/server environment. Not just the ones you have now. For information, call 800-230-IDEO.*

ALL OTHER TRADEMARKS ARE PROPERTY OF THEIR RESPECTIVE OWNERS. ©1994 SAPIENS INTERNATIONAL CORPORATION, INC.



## PowerBuilder

CONTINUED FROM PAGE 77

that contained business and transactional logic to manage traffic flow data and created a third database layer that used Sybase, Inc.'s relational database management system. PowerBuilder applications are currently two-tier, he said. His group used PowerBuilder to create a presentation layer for the application that resides on the end user's desktop.

The middle business function layer was coded in the C programming language and SQL and resides on the server. The third database layer was created using Sybase's SQL Server.

"It may be easier to get going on client/server with two-tier systems, but we needed growth and scalability," Swanson said.

His site used Open Environment's tool set to create an RPC transactional environment that supports DCE, allowing the three tiers to communicate with one another, access data and manage transactions.

Swanson's group found

multiple benefits to using the RPC environment.

"The RPC opens the connection, performs the function and closes down the connection smoothly. You're not maintaining connections all the time and dealing with the problems that entails," Swanson said. "You put out one request to the network for processing, and a self-contained request comes back and you're done."

According to Robin Dircks, network service manager who oversees about a dozen UBS data-entry employees working on Proxnet, the new system is much faster than the legacy Microrim, Inc. Rbase database previously used in conjunction with PC DOS machines.

"It took the old database as long as 10 or 15 minutes to perform some queries. Now it's usually immediate, although it can take 10 or 15 seconds when it's slow," Dircks said. Complicated processes can require searches against as many as

14,000 data points, she said. "It's my understanding that the three-tier structure is primarily responsible for performance improvements."

She added that the ease of use of the Windows interface and the ability to perform complex queries have greatly increased the efficiency of her staff.

Industry analysts said that amalgamating groups of tools to create three-tier client/server applications is not simple. But for those who need the scalability

and robustness, it is worth the effort, they said.

"It's not for the faint of heart and not for people who need applications to get into production right away," said Peter Kastner, an analyst at Aberdeen Group, a Boston consulting firm. "And it's not for someone with a staff of a hundred Cobol programmers who wouldn't know a PC if it bit them. With those caveats, the three-tier architecture is now becoming the de facto topology of choice for serious [on-

line transaction processing]-based applications."

Developers who opt for the creation of three-tier applications with PowerBuilder must be prepared for some "serious system integration," Kastner added, because they will be dealing with tools from multiple vendors and managing multiple tiers. But PowerBuilder handles "fat" desktop clients, and it integrates well with desktop applications, which alone is a big deal, Kastner said.

## ON SITE

**United Behavioral Systems**  
Minneapolis

**Challenge:** To distribute key applications across geographical regions as the business expands.

**Technologies used:** Powersoft's PowerBuilder; tools from Open Environment and the OSF's DCE RPC; and Sybase's database.

**Result:** One application was deployed to 700 users with dramatically increased performance and improved querying facilities. A second administrative application was deployed to 400 users. A third application, a case management system, is set to go into beta testing in the spring.



# A smart way to spe



### Discounts

CONTINUED FROM PAGE 77

pen under different pricing regimes," said Murali Mantrala, an assistant professor of marketing at the university in Gainesville, Fla.

Furthermore, the markdown strategy can be adjusted to reflect the latest actual sales data and retail conditions. "If

there is a major disaster, then the trajectory is no longer valid, so you can get a fresh estimate from that point on," he said.

The software, written in 5,000 lines of C++ code, runs on an Intel Corp. 80386-compatible PC with a math coprocessor, Mantrala said. The core is a dynamic optimization algorithm that can account for uncertainty.

"Algorithms are enormously powerful, but they are underused in the retail in-

dustry," said Donald B. Brout, a consultant of retail and manufacturing systems and president of Quality Technology Decisions, Inc. in New York. He said embedding optimization algorithms in an ordinary information system can give it extraordinary powers [CW, March 22, 1993].

"Inventory management systems are getting attention in the retail industry but not pricing [systems], even though inventory and pricing are tightly inter-

twined," Brout said.

By using the reams of sales data that retailers collect to adjust pricing strategies at the local level, a price optimization system "can make a huge difference on the bottom line," Brout added.

Mantrala, who has been developing the system for five years, said the timing and the magnitude of a retail markdown are critical. "Subtle changes in timing—such as reducing the price 20% this week instead of next week—can make a big impact on your overall profitability," he said. "Or, you might mark down on the right days but do it by 10% more than you need to, and that could have a really large effect, too."

So it is not surprising that many national and regional retailers have expressed interest in the program, which Mantrala said he hopes to commercialize in the next six months.

#### Integration needed

Mark was tested in a pilot program at Body Shop, a women's clothing retailer in Jacksonville, Fla., where six retail buyers chose a few items for the study and tracked them throughout the season.

"All of the markdowns we do now are guesswork," said Beth Angelo, a Body Shop buyer who used Mantrala's program. "This program helps you plan your merchandise and sales strategies, and you can revise your first estimates if sales are slower than what you expected."

Angelo said the program is ideal for items such as jeans because store buyers know the sales history of such a staple beforehand. She praised the prototype as "the wave of the future."

Her only criticism was that in a department with hundreds or thousands of items, updating Mark's sales data for each item would be too time-consuming. While it usually takes Mark only 15 seconds to recommend a price strategy, data entry can take up to 10 to 15 minutes.

Mantrala said the solution is to integrate Mark with store information systems so the data would automatically feed into the model, thus eliminating the manual data entry.

"The model provides useful directions, but buyers still need to use their judgment in making pricing decisions, especially with regard to fashion items," Mantrala said.

It's also a smart way to maximize the PC networking capabilities of OS/2® or DOS with Windows™. In fact IBM® TCP/IP workstation software is a perfect building block for linking users running on virtually all IBM environments including AIX®, OS/400®, VM and MVS, as well as non-IBM systems.

### IBM TCP/IP for OS/2 or DOS/Windows

With IBM TCP/IP for OS/2 or DOS/Windows you not only get industry-standard network software, you also get a feature-rich package. File transfer, terminal emulation, mail, network printing, remote command execution and network management are just some of the applications included. Optional features include NFS®, Netbios, X-Windows (OS/2) and application development toolkits.

Of course one of the most attractive features of IBM TCP/IP solutions is the kind of support and service that only IBM offers. To order or for more information, call 1 800 IBM-CALL, Dept. SAO21.

IBM TCP/IP. When it comes to making it all work together, we know our ABCs.

IBM, OS/2, AIX and OS/400 are registered trademarks of International Business Machines Corporation. NFS is a registered trademark of Sun Microsystems, Inc. Windows is a trademark of Microsoft Corporation. Dealer prices may vary. © 1994 IBM Corp. All rights reserved.

# IBM

# all interoperability.

ObjectPlus Corp. has announced WinPlus 3.0, an object-oriented application development tool.

According to the Cambridge, Mass., company, WinPlus 3.0 provides a visual rapid development environment for front-end applications.

The product was designed for use with any graphic-intensive development project.

WinPlus 3.0 costs \$495.

► **ObjectPlus**  
(617) 491-7575



---

**ALONE, AMID THIS INCREDIBLE BEAUTY AND SP  
(IT'S LOU, WITH THOSE**

---

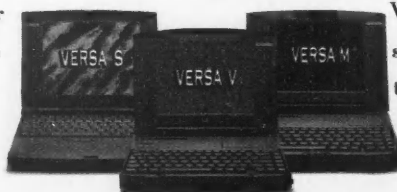
No matter how far away your job takes you, you can always stay in touch with an NEC Versa™

NEC's line of notebooks offer the highest level of modularity imaginable, including wireless, satellite-based messaging, with

our VersaPage™ PCMCIA option.

Or snap in additional RAM, hard disk storage, even an extra battery for those times when you are really

far away from it all. Of course, when you happen to be at the office, just slide your Versa into a Versa Docking Station™ so you can take advantage of a full range of desktop capabilities.



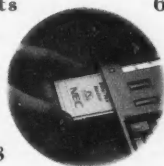


---

**LENDOR, SOMEONE IS SENDING YOU A MESSAGE.  
NUMBERS YOU NEED.)**

---

We also make sure everything you work on will look its absolute brightest and clearest. Choose a new, photo-quality 24-bit True Color display with 16.8 million colors. Or you can select



the first-ever high-resolution 800 x 600 color display, or choose one of our enhanced TFT or DSTN displays.

You should consider Versa for its modularity or its brilliant screen, all backed by

a three-year limited warranty. Or just do it for Lou, who needs to be sure you got those numbers. Call 1-800-NEC-VERSA for details.

---

**SEE, HEAR,  
AND FEEL THE  
DIFFERENCE™**

---

**NEC**

Versa, VersaBay, VersaPage, Versa Docking Station, and See, Hear and Feel the Difference are trademarks of NEC Technologies, Inc. The Intel Inside logo is a registered trademark of Intel Corp. All other trademarks are the property of their respective owners. The Energy Star emblem does not represent EPA endorsement of any product or service. NEC GSA#G800K91AGS5241

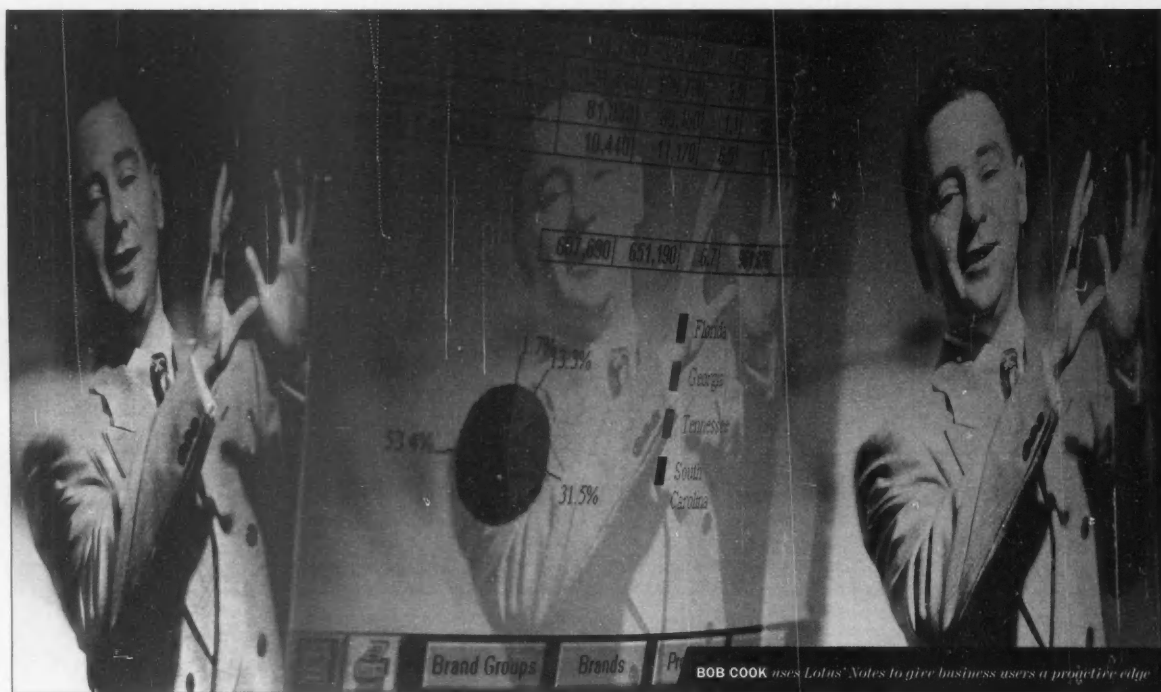
INSIDE:

The last \$%&^#! word on house buying. See page 91.

# Management

BY KATHLEEN MELYMUKA

# THE VISION THING



BOB COOK uses Lotus' Notes to give business users a projective edge

**A**s project manager, Eileen Birge was putting the final touches on a huge client/server system for a customer far from her home base at BSG Corp. in Houston. The project involved 30 different vendors and 111 products.

"We'd finally gotten everything working when one of the ven-

dors issued a new release of some product," Birge recalls. When she plugged in the new product, it blew the entire system, and "things wouldn't work together anymore."

Catastrophe? Not for Birge. She posted an SOS on the Lotus Development Corp. Notes technical bulletin board that links BSG's 517 employees in 35 project locations around the country. A half-

dozen consultants responded that day, sharing their expertise and experience to help her solve the problem.

"The Notes system has been a lifesaver," she says. Each piece of it was developed to meet specific business needs and dovetail with an unusual corporate culture.

How do you build a system like that? The key is to bridge the com-

munication gap that has always existed between information systems and business, helping business users envision what IS can do and helping IS staff understand what they should do.

The two sides have always had a tough time reaching a mutual understanding. "The problem has been that the end-user community thinks they can communicate



their requirements and IS thinks that they understand," says Alan Prenouveau, director of the Lotus Consulting Services Group, a subsidiary that helps Lotus customers develop effective Notes systems.

But with the latest technologies, such as client/server, mobile computing and applications such as

Notes, communication must

needed to standardize audit information and make it available to all teams at all sites at the same time.

Notes was able to deliver that standardized information and a lot more once the consultants were able to show users what was possible.

To translate requirements into reality, the Lotus group built a prototype auditing process using Notes. It allows users to see how they

understand how a new technology can help users reach the level of "Aha!" At Domecq Importers, Inc., a \$100 million importer and distributor of wines and liquors, bridging the communications gap was one of the first orders of business for the new chief information officer.

Domecq had 45 employees in its Greenwich, Conn., headquarters and 45 salespeople throughout the country when it hired Bob Cook as director of information technology. Cook was charged with developing an information

system to give Domecq a competitive advantage. Domecq retained a team from Concept Information Systems to help him. (Cook still works with Domecq on a consulting basis.)

Cook knows client/server technology, but he had to grow into the liquor business.

"They spent six months bringing me through the business," he says. "I went out into the field with salespeople. I spent time with marketing people. I learned how they look at sales, depletion, profitability; how they look at external, third-party information sources like market research; how they used that in marketing to substantiate pricing, discounts, brand focuses."

After his sojourn on the business side, Cook decided that get-

having to move between IS and business, he drove development from both sides himself.

In designing a database, for example, a user would ask for the usual customer name, city, state, street and annual sales.

"But because I understand the business, I know I don't want just annual sales—I want to see depletion, geographical data, how it's trending," Cook says. "Maybe the Hispanic population is increasing by 15% but Hispanic brands are up only 4%. A user could never conceptualize [the system's] being able to bring that data together."

Cook could. The system he developed puts that kind of data, together with more conventional information on order and inventory status, in salespeople's laptops. "We don't decide what they can or can't do," says Patrick McGuinness, current director of information technology at Domecq. "They can drill down and get whatever data they want."

It also includes a decision-support system that matches quotas, plans, historical sales and current depletions and uses business rules to alert the salesperson if something is out of whack.

For example, a typical liquor retail customer who has sold 200, 220 and 235 cases in the past three Novembers and currently has 100 for the coming November may underestimate and order only 100 (see chart below). The system keeps

## COMMUNICATION IS STILL THE KEY TO ALIGNING INFORMATION SYSTEMS WITH BUSINESS GOALS. THE FIRST STEP IS OPENING THE MINDS OF USERS TO THE POTENTIAL BENEFITS OF NEW TECHNOLOGIES.

could make changes in the process.

"Users don't really understand until they see an application they can relate to," Prenouveau says. "When people see what it can do, they go, 'Aha! Now if I can do that, can I do this?' Then we add functionality. With each iteration, you're showing them a little bit more of what could be that they've never thought of before."

A side benefit of the Notes system for NationsBank was the ability to integrate the audit review process into the Notes system so reports move through review levels electronically. Two or three people at different locations routinely review each audit report. Moreover, they use the Notes Doc-link feature to set electronic links between the reports and the often voluminous backup materials. Now, rather than pore through mountains of paper addenda, reviewers click on a citation and the backup documentation appears. This allows them to finish reviews in one day.

The main advantage of the Notes system, however, is that it allows dispersed audit teams to work concurrently. Previously, because complex audits were performed and reviewed in sections, parts could fall through the cracks and remain unfinished or unreviewed. The Notes system alerts reviewers if sections of the template are unfinished or have not been signed off on.

### ALL AT ONCE

One company that had to wrestle with sharing information over widely scattered locations was NationsBank Corp. in Charlotte, N.C. To improve the way NationsBank performed its basic auditing function, the Lotus Consulting Services Group took a prototyping approach to developing a Notes system for the 350-person audit department.

"Auditing is done on a team basis," says John Curry, senior vice president and director of electronic data processing audit. "We do a lot of nationwide audits."

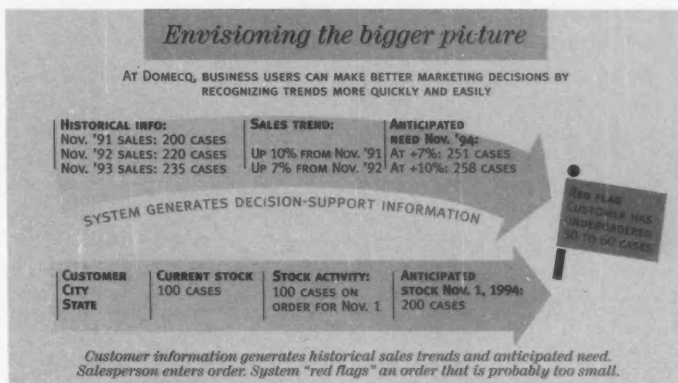
Traditionally, those audits were done sequentially, with teams moving from site to site; NationsBank management sought to improve audit quality and save time and money by auditing different sites concurrently. To do this, it

"The ability to communicate — for people to have this multiple access and do work concurrently vs. a very sequential operation — is a tremendous advantage," Curry says. "The time from the beginning to the end of the audit is tremendously compressed."

Getting this communication advantage requires that IS managers

ting certain information to the field sales force would allow the reps to use their entrepreneurial skills to get an edge on the competition.

A corollary need was for better use of financial resources. Cook's immersion in the business helped him align the system properly and quickly. Rather than constantly



# THE VISION THING

CONTINUED FROM PAGE 85

feedback and allowing the company to update planning four times a year rather than once. That way, if a sales campaign

is floundering, it can be revamped after one quarter, with three quarters of the budget still intact.

"It's much more proactive," Cook says. "You can see what's going on in a market long before the competition does and can invest a lot smarter."

At the bottom line, it looks like the technology has also delivered the competitive edge. "We were up 60% in sales in the last year, and we think information technology has played a big part in that,"

McGuinness says.

If the developer and the user are the same person, as is the case with BSG, you don't have to wait for the "Aha!"

As a systems integrator specializing in client/server technology, BSG has virtually no gap between IS and business because IS is the business, so developing a well-aligned system quickly was fairly simple. The key was using Notes applications to give widely dispersed business users quick and easy access to one

another and to other departments.

The main component of BSG's culture, Birge says, is the sharing of information in a geographically dispersed environment. "It's our business to exchange ideas," she says. "But we're not a company where everyone is together a lot physically. Right now we're in 35 places throughout the country."

"There are two things critical to our success. First, we have to leverage knowledge. Notes is one of the tools that really helps us bottle expertise and make it available to many clients rather than only to the client where the resident expert happens to be."

The second success factor is "sharing our culture and keeping our people involved and a part of BSG," she says.

The basic Notes system got BSG's collective feet wet. "We told people to 'Look at this and then tell us what you need,'" Birge recalls. "It was an organic process. Users looked into it and came up with ideas."

One side benefit of the Notes system was to improve employee access to training resources. Professional development

## JAM6. NOTHING'S FASTER.

Creating demanding client-server applications with JAM 6 is intuitive, graphical, immediate. Get on the fast track with JAM 6.

Our Visual Object Repository is the key ingredient. It gives you visual building

are stored as visual data objects that are identical to their

*JAM 6's Visual Object Repository and Transaction Manager let you build the most demanding client-server applications with less effort than any other tool.*

onscreen form. Simply drag and drop data objects from the Repository onto your application

ships between objects, are automatically transported into your application.

And the JAM 6 Transaction Manager automatically handles database access so you're free to concentrate on the big picture.

Once you've quickly and cost-effectively built your application, run it royalty-free on numerous presentation environments, 100 hardware platforms, nine operating systems, 20 databases, and any network.

The Visual Object Repository and Transaction Manager are just two examples of JAM 6's speed, power and flexibility. Get the whole story in our product brochure. Call: Call today for your FREE

Demonstration Kit.

1-800-458-3313.

For international inquiries:

212-267-7722

or Fax 212-608-6753.

**J Y A C C**

blocks to quickly create applications. Application components

and all attributes, rules and procedures, as well as the relation-

**JAM. The Word Is Spreading.**

NEW YORK ATLANTA BOSTON CHICAGO HOUSTON NEW JERSEY ORLANDO SAN FRANCISCO BENELUX BRAZIL CROATIA DENMARK FINLAND FRANCE GERMANY INDIA ISRAEL ITALY MEXICO RUSSIA SINGAPORE SLOVENIA SWEDEN SWITZERLAND THAILAND UNITED KINGDOM VENEZUELA

### Visual aids

NATIONS BANK, DOMEQ and BSG HAVE FOUND THREE WAYS TO BRIDGE THE COMMUNICATION GAP BETWEEN DEVELOPERS AND USERS

1. PROTOTYPING: GRADUALLY BRINGING BOTH SIDES CLOSER TOGETHER VIA SERIES OF ITERATIONS
2. IMMERSION: TEACHING THE BUSINESS TO PEOPLE VERSED IN TECHNOLOGY
3. DUALITY: BRIDGING THE GAP WITH THE HELP OF PEOPLE WHO ALREADY HAVE EXPERIENCE IN BOTH BUSINESS AND IS

is the second highest expense item at BSG, and handling responses to requests for courses from the 500 employees was a challenge in itself.

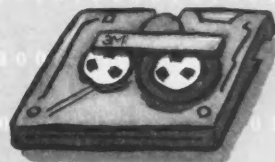
BSG built a Notes database of the course descriptions and schedules of 30 approved vendors. A consultant can click on a course offering and generate an electronic request form, which is automatically completed and routed to the project manager to approve time off. It then goes to the travel coordinator to price travel, to the administrative manager for budget approval and to the training coordinator. If a request is stalled, the system shows where; if a request is refused, the employee is so notified.

Numerous ideas have been developed, most within a week or two of conception. "It's been vital to our company," Birge says. "I can't imagine life without it."

Systems you can't live without are systems aligned with the business strategy, and the key to that alignment is communication. The terms of the dialogue between IS and users are evolving, however. Freed by the systems' capabilities, the technology side is no longer speaking the language of limits. ■

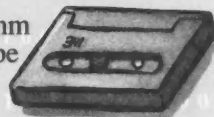
Melymuka is a free-lance writer in Duxbury, Mass.

The path to follow whichever  
storage option you choose.

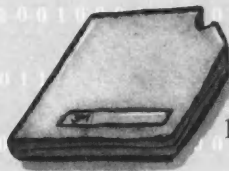


5 GB-Magnus™  
Data Cartridge

5 GB-8mm  
Data Tape



2.4 GB-ECart™  
1/2" Tape Cartridge



2 GB-4mm  
Data Tape



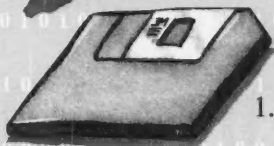
1.3 GB-Rewritable  
Optical Disk



255-750 MB-MC3000  
Minicartridge



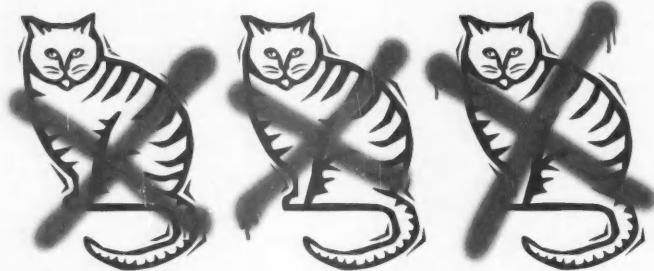
1.44 MB-High Density Formatted Diskette



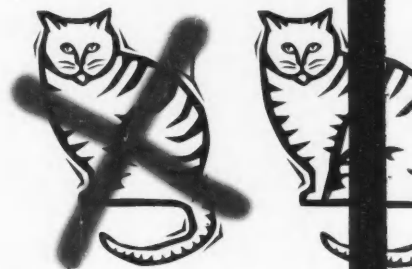
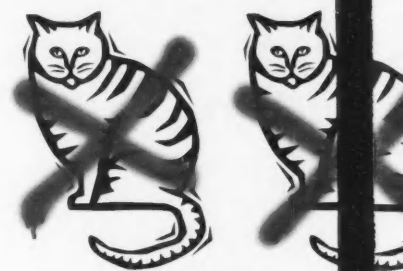
Whatever capacity you need, whatever technology you choose, 3M has a proven, reliable solution. In fact, users rate 3M brand diskettes and quarter-inch cartridges number one in reliability—and overwhelmingly prefer them over other brands. So whether it's our enhanced performance diskette, Rewritable Optical, 4mm or 8mm data tapes, ECart™ 1/2" tape cartridge or the multi-gigabyte capacity of quarter-inch cartridges—we're ready to grow with you. That's why more businesses protect important information on 3M brand data storage products than any other brand in the world. Find out more. Call 1-800-888-1889, ext. 1504.

3M data storage products require compatible drives. "ECart" and "Magnus" are trademarks of 3M. Preference and reliability ratings based on independent research.  
© 3M 1994

**3M** Reliability



386-based PCs



486-based PCs

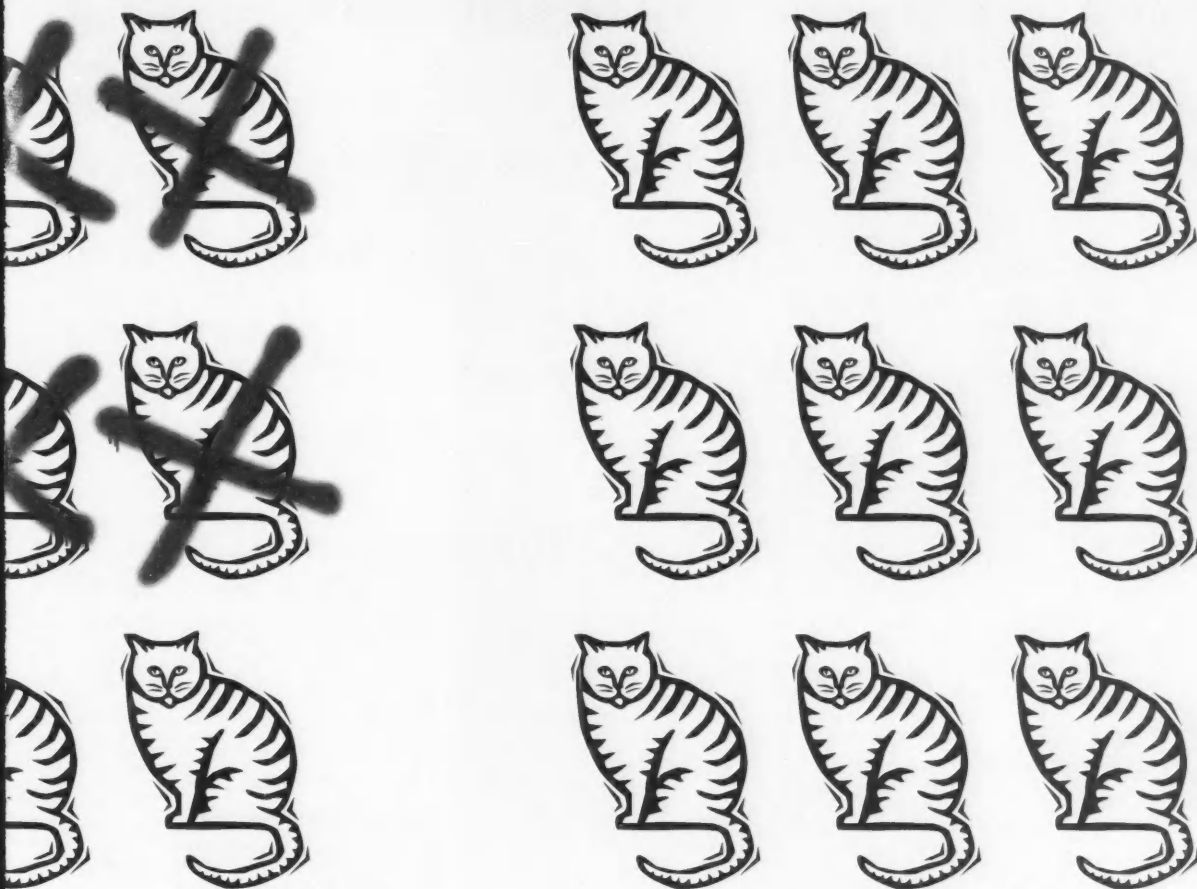
# Let's say compute



Some computers have nine lives left. Others don't. That's why if you're buying a PC today, you should only be considering Pentium™ processor-based PCs.

The reason is simple. A more powerful PC lasts longer, since it will still have plenty of horsepower when tomorrow's applications come along. And most new Pentium processor-based systems also include the latest PC technology — like





Pentium™ processor-based PCs

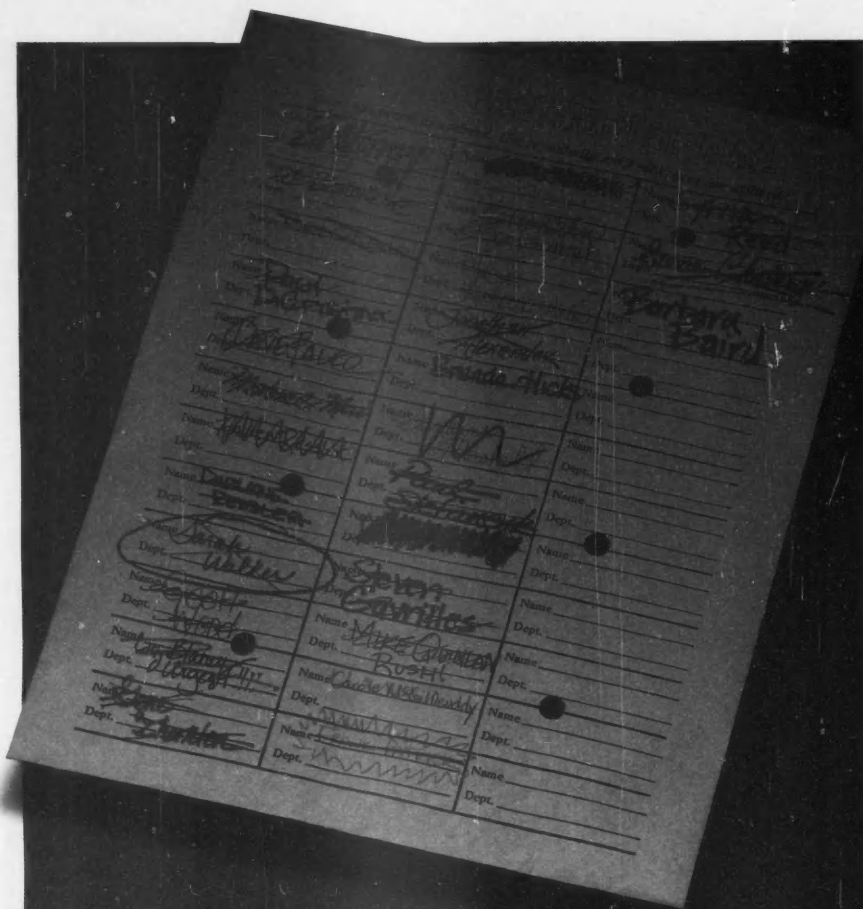
# rs have nine lives.

PCI local bus for high-speed graphics and Plug and Play technology for easy expansion in the years to come.

That, plus the fact that these PCs are now so affordable, makes this a great time to buy a Pentium processor-based PC. Especially when

you'll be getting a system that performs so well. Today. And several lives from now. For more information call 1-800-626-6788, Ext. 213.

**intel**®



introducing  
A technology  
that DOESN'T  
just push  
THE envelope.  
it throws IT AWAY.

Let's face it. Those envelopes with the little rows of holes and all the scratched out names are definitely not cool. The ridiculous red string—who can be bothered?



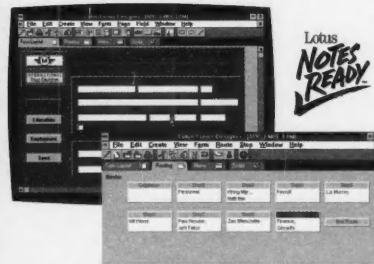
But an elegant, automated system for designing forms and routing them through the company—now that's another story.

#### THAT'S THE NEW LOTUS FORMS.™

Winner of Byte Magazine's Best Software Category Award at Spring Comdex '94, Lotus Forms consists of two components: First is the Lotus Forms Designer which allows you to create templates to replace conventional forms for just about any task. And it includes twelve sample templates for common forms like purchase orders or expense reports.

Once a form has been developed, the Lotus Forms Filler lets end-users complete them easily and efficiently. And they can use built-in tools, like the red pen and Pop Up notes, to call out questions, add emphasis or include comments.

And Forms includes LotusScript™ 2.0, a BASIC-compatible language. So it's easy for you to set up form routing and tracking. You could, for example, send a form around for electronic signature approval



Lotus Forms automatically routes forms across: Lotus Notes®, Lotus® cc:Mail® and MS® Mail systems.

and then print to a standard form. Lotus Forms smoothes the process, saves the cost of paper forms and reduces time spent filling them out.

Lotus Forms is only \$395,\* and it includes five licenses. For more information or for our White Paper about Forms Automation, "Eliminating Paperwork to Streamline Business," call 1-800-872-3387, ext. 9609, or visit your Lotus Authorized Reseller.†

Lotus Forms—because you were born to push the envelope, not to lick it.

**Lotus**  
Working Together

\*Suggested Retail Price. †For volume purchase information, inquire about Lotus Passport. In Canada, call 1-800-60-LOTUS. © 1994 Lotus Development Corporation, 55 Cambridge Parkway, Cambridge, MA 02142. All rights reserved. Lotus, Working Together, Lotus Notes and cc:Mail are registered trademarks and Lotus Forms, LotusScript and NotesReady are trademarks of Lotus Development Corporation. MS is a registered trademark of Microsoft Corporation.

# Bah, housebug!

Roscoe J. Rant



I'm as prickly as a programmer who sat on a megabyte of memory chips with the pointy side up. I just bought a new home. And let me tell you, the companies that "helped" me

move in didn't exactly make me swoon with domestic bliss.

I mean, the computer systems these people had (if they even had them) and the way they used them would have been OK if I was moving in to, say, a nice mud hut during the Stone Age. But for 1994? Forget about it.

It started even before we bought the place. Think the real estate agent could give us a printout of homes in our price range? Oh, no. Instead, my wife and I have to flip through hundreds of smudged pages of real estate books. Make a little note here, a list there. And get a computerized copy of recent real estate sales in town? Right.

It's not like the agent doesn't have all this stuff on her Macintosh or anything — she does. Since when does it hurt business to make it easier for customers to spend money? It's not like we're going to turn around and sell the information they give us, for Pete's sake.

So by some miracle, a couple of months later we manage to find a nice little place. It's a good thing we prequalified for the loan. I mean, from start to finish, it takes nearly two months for the bank to let us sign our lives away. All this for a process that requires, what, maybe 15 minutes of paper shuffling and five minutes of credit checking?

Why can't an industry that spends, I don't know, maybe \$10 zillion a year on computers approve a mortgage in less time than it takes to build the average house?

## The tip of the iceberg

So moving day approaches. A week before the big day, I call the big national moving company that's supposed to do the job. "Sorry, Mr. Rant," the local owner/operator says. "It looks like your truck somehow got rerouted. No, we don't know exactly where, maybe Colorado. But the driver is supposed to call by this Thursday." We finally get a. other truck — a week late.

It turns out that was just the warm-up. A month later we need to rent a smaller

truck to pick up a couch my sister is giving us. It doesn't take me long to figure out there must be a better way to check how many trucks are available in the metropolitan area than by calling every dealer in the yellow pages and asking, "Do you have any trucks this weekend?"

But not one of these so-called major chains has a computer system that can tell them if their franchise in the *next town* has what I'm looking for. There's no computer linking any of these businesses, so I end up calling maybe 15 or 18 rental places. And don't even ask me about how badly they screw up my bill.

So then we decide to switch from oil to gas to heat our hot water. We call the local gas company. Sorry, we have to visit the office to make the request. So we do.

We talk to the woman who handles new accounts; then we talk to the scheduling department, then back to the woman in new accounts, then to the rental program person. Later that week we talk to the plumber hired to install the meter. Then we talk to the guy who drills the hole so the meter can go in.

In the end, guess how many calls and visits it takes to install a new gas meter and hot water heater? Twenty. I mean, the guy who makes the muffins at my local coffee shop has heard about re-engineering. Think maybe he ought to be running these utilities?

I could go on and on. For instance, we

bought a new bed, and the store overcharged me \$50 for delivery. The saleswoman explained that because of the way these things are processed, it would take two months for my account to be credited. It's been four months, and I'm still waiting.

Oh, did I mention my tax bill? Turns out it's gonna take a year for my local *uncomputerized* Registry of Deeds to transfer the property title to my name. Until then, I have to clomp down to Town Hall and pick up my own bill, which is still under the previous owner's name. Cheesh.

Don't get me wrong. Not every company I've used suffers from Clue Deficit Disorder. For example, I went to The Home Depot, applied for a credit account and, bingo, 15 minutes later I

Why can't an industry that spends... maybe \$10 zillion a year on computers approve a mortgage in less time than it takes to build the average house?

was charging Sheetrock and ripsaws like *Home Improvement's* Tim "The Tool Man" Taylor.

And I did hear recently that Fannie Mae and one of the big mortgage companies are working on a mortgage whose waiting time is not measured in dog years. Wonders never cease.

But let me tell you: It'll be a long time before I hang a tapestry in my living room that says, "Computer Sweet Computer."

In real life, the pseudonymous Rant is an angry consumer of information technology and a *Computerworld* senior editor. He may still be one of your company's customers.

## Intelligence

### Files

## Speaking in IS tongues

Just when information systems professionals thought they had found a common language with business users, along came client/server to introduce a new Tower of Techno-Babel.

According to Paul Mulligan, vice president of operations research at Fidelity Investments in Boston, the move to client/server has introduced a whole new technology sublanguage. The result is that business users are again scratching their heads when IS staff try to talk turkey with them. That isn't helping bridge the communications gap that already existed, Mulligan notes.

Mulligan says the language barrier is also showing up between client/server aficionados and mainframe veterans. Speaking before the Boston chapter of the Association for Systems Management recently, Mulligan, who has 20 years of experience in IS, noted that when his younger IS staffers come to him with a client/server problem, he often finds himself confessing to senior management, "I don't know what they said,

but it doesn't sound good."

## IS not tops on their list

Few top U.S. manufacturing companies plan to significantly invest in new manufacturing control system software, and disappointment with the results of manufacturing resource planning (MRP) II is a major factor.

That is one of the findings of a survey of more than 300 senior-level manufacturing executives at companies and corporate divisions with sales of more than \$25 million. The survey asked manufacturing executives what steps their companies are taking to gain competitive advantage. Topping their responses were total quality management, continuous improvement, business process re-engineering, cycle time reduction and improved customer service.

But the same executives are dissatisfied with their current information systems and therefore plan no major IS investments. They cited disappointing performance of MRP II and a skepticism of the return on investment (ROI) from technology. They indicated "the real ROI" was to be found in quality improvement, cycle time reduction and improved delivery performance.

Source: Survey by R. Michael Donovan, Inc., Natick, Mass.

## Leveraging IS for advantage

To help companies leverage technology for competitive advantage, an Institute for Business Innovation (IBI) has formed in Portland, Ore. The institute announced the faculty for its first educational offering next month that reads like a who's who of MIT's Sloan School of Management.

The institute, a division of Sequent Computer Systems, Inc., was established "to provide a foundation upon which senior business and technology executives can apply information technology effectively," according to institute spokeswoman Linda Duchaine.

The first educational series will be a five-day program titled "Aligning Business and Technology for Competitive Advantage." It will be offered at Babson College's Center for Executive Education in Wellesley, Mass., Jan. 15-19 and at the Chamindate Executive Conference Center in Santa Cruz, Calif., March 12-16.

MIT Sloan School instructors who will serve as faculty for the series include Chris F. Kernerer, associate professor; Donald R. Lessard, professor of international management information; Stuart Madnick, professor of information technology; Michael S. Scott Morton, professor of management; Jeanne W. Ross re-

search associate at the Center for Information, Systems Research; Michael Siegel, principal research scientist; John Sterman, professor of management science; and David Tennenhouse, MIT associate professor.

John C. Henderson, professor of management information systems at the Boston University School of Management, and Larry Krakauer, vice president of JYACC, Inc., will also be on the faculty.

For information on the institute or the education series, contact Linda Duchaine, The Institute for Business Innovation, 1 World Trade Center, Suite 1100, Portland, Ore. 97204, (800) 933-0088, fax (503) 578-5010.

## Database is a delight

Professional Services Management Association in Charlotte, N.C., recently honored organizations that have helped improve the business management of architectural, engineering and other design and consulting firms. Among them was Al/Boggs, a planning and architecture firm in Washington that created a relational database to track marketing information. The database links valuable information and generates reports, including prospect lead lists, sales call reports and staff resumes.



# OBJECT WORLD

## Objects In The Real World 1995

### Reap the rewards of object technology. For your company. And yourself.

Caterpillar Inc. applied object-oriented analysis and design techniques to streamline the steel procurement process. ■ The Palm Beach Medical Examiner's Office took advantage of reusable objects to create a powerful object technology (OT) application—in record time. ■ Canadian Tire used OT to build a true client/server application that improved customer service and increased traffic in retail stores. ■ The fact is, thousands of organizations are already putting object technology to work in manufacturing, financial services, telecommunications, aerospace, defense, retail, transportation, and more. ■ Object World Boston—March 19-23, 1995—is your chance to discover how you can use OT to create distributed applications that improve performance, cut costs, boost profits, and build competitive advantage. ■ So register for Object World Boston today. And increase your chances for success.



# UPDATE No. 2

#### Learn from case studies, OT users and expert panelists.

No other OT conference offers you a broader range of subjects or greater technical depth than Object World. You can choose from 15 tutorials and 54 conference sessions. Many are based on actual case studies and feature OT users and experts who'll share their knowledge and experience. Here is a sample of sessions organized into four separate tracks:

**OBJECTS IN BUSINESS TRACK:** Building the Business Case for Object Technology; Planning for Reuse; Strategic Issues in Transition Management; and The OT Dream Team.

**TECHNOLOGY OF OBJECTS TRACK:** A Case Study in Large Scale OT Development; Managing Complexity; Building Reusable Software Components; Managing OO Projects: Scaling Up from Small to Large; and Object Metrics: Current Practices.

**DISTRIBUTED COMPUTING WITH OBJECTS TRACK:** Bridging Client/Server and OO Computing; Choosing a CORBA Implementation; Planning for Large Scale DOC Environments; and Case Study: Xerox's Migration to Distributed Object Technology.

**SOFTWARE DEVELOPERS TRACK:** Incorporating CORBA into C++ Applications; Comparison of C++ and Smalltalk for Use with Object Databases; Case Studies: Detecting Software Development Failures and

Recovering; and Patterns and Frameworks: Elements of Reusable OO Software.

#### Hear from OT industry's movers and shakers!

Pick up valuable tips and techniques from the implementers who've brought OT from the back room into the mainstream and made it the technology of choice for IS departments. Don't miss presentations by Grady Booch, Peter Coad, Stephen Mellor, Ivar Jacobson, David Taylor, Andrew Topper, and Paul Harmon.

#### Get the inside story at our Bonus Sessions.

Learn the ins and outs of OT during several 45-minute Bonus Sessions including OMG: Building the Object Technology Infrastructure and Industries in Action—covering healthcare, financial services, and telecommunications.

#### Save \$200 on the full conference program. Register today.

If you sign up for the full conference program by February 17, you'll save \$200. But that's not all. You'll also get a FREE CD, *The World of Objects*, the definitive reference database for OT. Plus, you'll receive a book filled with money-saving coupons you can redeem for products and services—only at Object World.

#### DON'T MISS THESE KEYNOTE PRESENTATIONS.



**Jon Hopkins**, President of Palladio Software, will conduct a panel discussion, "Theory Is Great—But Does It Get The Job Done?" Three methodology experts will discuss how their peers' methodology addresses the issues related to object models and iterative development.



**Steven A. Mills**, General Manager of IBM Software Solutions, will explore the topic, "Objects: Not Just For Programmers Anymore." See how objects have become the driving force in the way software is developed, purchased, delivered, and maintained.



**David Taylor**, Ph.D., President of Enterprise Engines, will discuss "Business Engineering With Object Technology." Find out how companies are using OT to improve productivity and increase profits.

WAKE UP AND SMELL THE OBJECTS • March 19-23, 1995

To register or for more information, call 800-225-4698.

Sign up for Object World Boston by February 17 and save \$200 on the full conference program. And get a FREE CD, *The World of Objects*—the definitive reference database for OT. It's worth the price of admission!

#### HOW TO RESERVE YOUR PLACE:

**By Mail:** Fill out this coupon and mail it to Object World Boston, P.O. Box 9107, Framingham, MA 01701.

**By Phone:** Call us toll-free at 800-225-4698 in the U.S. or 508-879-6700.

**By Fax:** For fastest service, fax this coupon to 508-872-8237.

**By E-Mail:** OMG@OMG.ORG.

Type the word "help" by itself in the body of your letter, and the server will send you complete instructions. To receive a list of available files, type the word "index" on a separate line.

**By World Wide Web Server:**  
<http://www.idgweb.com>  
Select Object World Boston.

(Check one only)

- ☐ Reserve—without obligation—my \$200 discount on the full conference program.  
☐ Please send me more information about the full conference program and register me for my FREE Exhibits Pass.  
☐ Register me for my FREE Exhibits Pass—a \$50 value.  
☐ I'm not ready to register at this time. Please send me more information about:  
☐ Attending ☐ Exhibiting at Object World Boston.

Please print or type clearly.

Inquiry Code: CW6

Name \_\_\_\_\_

Title \_\_\_\_\_

Organization \_\_\_\_\_

Street \_\_\_\_\_

City/Town \_\_\_\_\_ State/Province \_\_\_\_\_

Zip/Postal Code \_\_\_\_\_ Country \_\_\_\_\_

Phone \_\_\_\_\_ FAX \_\_\_\_\_

Internet/E-Mail \_\_\_\_\_

© Object World is a registered trademark. No one under 18 admitted.

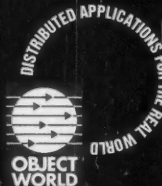
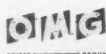


Object World offers you a no-questions-asked, money-back guarantee on the full conference program, so you have absolutely nothing to lose. Reserve your place—and your \$200 discount—today.

Sponsored and Produced by:



COMPUTERWORLD





# Fill it out. Fax it in.

**51 issues for only \$48.** *Now Only \$39.95*  
**FAX NO. 614-382-1058**

Yes, I want to receive my own copy of COMPUTERWORLD each week. I accept your offer of \$39.95\* per year - a savings of \$8.00 off the basic subscription price. Plus, I'll also receive the new '94-'95 COMPUTERWORLD Salary Survey FREE just for trying COMPUTERWORLD.

P/Code 98

First Name \_\_\_\_\_ MI \_\_\_\_\_ Last Name \_\_\_\_\_  
 Title \_\_\_\_\_ Company \_\_\_\_\_  
 Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Basic Rate: \$48 per year  
 \* U.S. Only. Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295. Foreign orders must be prepaid in U.S. dollars.

Please complete the questions below to qualify for this special rate.

**1. BUSINESS/INDUSTRY (Circle one)**

- 10. Manufacturer (other than computer)
- 20. Finance/Insurance/Real Estate
- 30. Medical/Law/Education
- 40. Wholesale/Retail/Trade
- 50. Business Service (except DP)
- 60. Government - State/Federal/Local
- 65. Communications Systems/Public Utilities/Transportation
- 70. Mining/Construction/Petroleum/Refining/Agric.
- 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
- 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
- 90. Computer/Peripheral Dealer/Dist./Retailer
- 95. Other \_\_\_\_\_

(Please Specify)

**2. TITLE/FUNCTION (Circle one)**

- IS/MIS/DP MANAGEMENT**
- 19. Chief Information Officer/Vice President/ Asst. VP
- IS/MIS/DP Management
- 21. Dir./Mgr. MIS Services, Information Center
- 22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech Planning, Admin. Services
- 23. Dir./Mgr. Sys. Development, Sys. Architecture
- 31. Programming Management, Software Developers
- 41. Engineering, Scientific, R&D, Tech. Management
- 60. Sys. Integrators/VARs/Consulting Management
- CORPORATE MANAGEMENT**
- 11. President, Owner/Partner, General Manager
- 12. Vice President, Asst. VP
- 13. Treasurer, Controller, Financial Officer

**DEPARTMENTAL MANAGEMENT**

- 51. Sales & Mktg. Management
- 70. Medical, Legal, Accounting Management
- OTHER PROFESSIONAL MANAGEMENT**
- 80. Information Centers/Libraries, Educators, Journalists, Students
- 90. Other Titled Personnel

**3. Do you use, evaluate, specify, recommend, purchase:**

(Circle all that apply)

**Operating Systems**

- (a) Solaris (e) Mac OS
- (b) Netware (f) Windows NT
- (c) OS/2 (g) Windows
- (d) Unix (h) NeXTstep

**App. Development Products**

Networking Products ☐ Yes ☐ No



Hot off the press!  
 1994-1995 edition

## COMPUTERWORLD

E4450-7

# Fill it out. Fax it in.

**51 issues for only \$48.** *Now Only \$39.95*  
**FAX NO. 614-382-1058**

Yes, I want to receive my own copy of COMPUTERWORLD each week. I accept your offer of \$39.95\* per year - a savings of \$8.00 off the basic subscription price. Plus, I'll also receive the new '94-'95 COMPUTERWORLD Salary Survey FREE just for trying COMPUTERWORLD.

P/Code 98

First Name \_\_\_\_\_ MI \_\_\_\_\_ Last Name \_\_\_\_\_  
 Title \_\_\_\_\_ Company \_\_\_\_\_  
 Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Basic Rate: \$48 per year  
 \* U.S. Only. Canada \$95, Mexico, Central/South America \$150, Europe \$295, all other countries \$295. Foreign orders must be prepaid in U.S. dollars.

Please complete the questions below to qualify for this special rate.

**1. BUSINESS/INDUSTRY (Circle one)**

- 10. Manufacturer (other than computer)
- 20. Finance/Insurance/Real Estate
- 30. Medical/Law/Education
- 40. Wholesale/Retail/Trade
- 50. Business Service (except DP)
- 60. Government - State/Federal/Local
- 65. Communications Systems/Public Utilities/Transportation
- 70. Mining/Construction/Petroleum/Refining/Agric.
- 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
- 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
- 90. Computer/Peripheral Dealer/Dist./Retailer
- 95. Other \_\_\_\_\_

(Please Specify)

**2. TITLE/FUNCTION (Circle one)**

- IS/MIS/DP MANAGEMENT**
- 19. Chief Information Officer/Vice President/ Asst. VP
- IS/MIS/DP Management
- 21. Dir./Mgr. MIS Services, Information Center
- 22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech Planning, Admin. Services
- 23. Dir./Mgr. Sys. Development, Sys. Architecture
- 31. Programming Management, Software Developers
- 41. Engineering, Scientific, R&D, Tech. Management
- 60. Sys. Integrators/VARs/Consulting Management
- CORPORATE MANAGEMENT**
- 11. President, Owner/Partner, General Manager
- 12. Vice President, Asst. VP
- 13. Treasurer, Controller, Financial Officer

**DEPARTMENTAL MANAGEMENT**

- 51. Sales & Mktg. Management
- 70. Medical, Legal, Accounting Management
- OTHER PROFESSIONAL MANAGEMENT**
- 80. Information Centers/Libraries, Educators, Journalists, Students
- 90. Other Titled Personnel

**3. Do you use, evaluate, specify, recommend, purchase:**

(Circle all that apply)

**Operating Systems**

- (a) Solaris (e) Mac OS
- (b) Netware (f) Windows NT
- (c) OS/2 (g) Windows
- (d) Unix (h) NeXTstep

**App. Development Products**

Networking Products ☐ Yes ☐ No



Hot off the press!  
 1994-1995 edition

## COMPUTERWORLD

E4450-7



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES



**BUSINESS REPLY MAIL**

FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

**COMPUTERWORLD**

P O BOX 2044  
MARION OHIO 43306-2144



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES



**BUSINESS REPLY MAIL**

FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

**COMPUTERWORLD**

P O BOX 2044  
MARION OHIO 43306-2144



# Calendar

## JAN. 8-14

**The 1995 Data Security Conference.** Redwood Shores, Calif., Jan. 9-11 — Keynote speaker will be John Anderson, former congressman and Independent candidate for U.S. president. Fees: \$295, \$195 for students. Contact: RSA Data Security, Inc., Redwood City, Calif. (415) 595-8782.

**Conference on the Information Superhighway.** Burlingame, Calif., Jan. 12-13 — Contact: Mindy Ha, Center for Information Technology and Management, University of California, Berkeley (510) 643-5316.

## JAN. 15-21

**First Annual Mobile Communications '95 Conference.** Dallas, Jan. 16-18 — The conference will address North American, European and Pacific Rim regions, marketing strategies used in these regions and regulatory and legislative matters aimed at mobile equipment vendors and service providers. Contact: Frost & Sullivan, Inc., Santa Clarita, Calif. (800) 256-1076.

**1995 Usenix Technical on Advanced Computing Systems.** New Orleans, Jan. 16-20 — Contact: Usenix Association, Berkeley, Calif. (510) 528-8649.

**SoftExpo '95.** San Jose, Calif., Jan. 17-19 — The conference will focus on business and technical issues facing software firms. Sessions include product development; marketing and sales; technical support; customer service; translation, or "localization"; finance; licensing; packaging and manufacturing. Contact: Mark Cramer, Expomasters, Englewood, Calif. (303) 771-2000.

**Mobile Outlook on Communications and Computing.** Atlanta, Jan. 18-20 — The three-day conference will focus on how to integrate mobile systems into a fixed computing environment, how much of what is now in place must change to permit remote access, how and when to make required hardware and software modifications and why some promising pilot programs succeed while others fail. Contact: David A. Kaminer, Kotch & Pollak, Inc., New York, N.Y. (212) 486-6186.

## JAN. 22-28

**ComNet '95 Conference & Exposition.** Washington, Jan. 23-26 — Products and technologies to be exhibited will include the following: inter-networking hubs, bridges, routers, gateways, modems, network applications, databases, private branch exchange-to-computer applications, multimedia, videoconferencing, LANs, servers, adapters, wiring, backup and network services, local and long-distance services, mobile computing, portable and handheld computers, client software, wireless data services, network management and security. Contact: IDG World Expo, Framingham, Mass. (508) 879-6700.

## JAN. 29-FEB. 4

**Special Libraries Association 1995 Winter Education Conference.** Raleigh, N.C., Jan. 29-31 — Theme: Managing information technology. Con-

tact: Special Libraries Association, Washington, D.C. (202) 234-4700.

**The 1995 Financial EDI Conference.** San Jose, Calif., Jan. 29-Feb. 1 — Seminars include "How to Define, Organize and Manage the EDI Committee," "Managing Electronic Commerce Integration," "Applying Project Management to Finan-

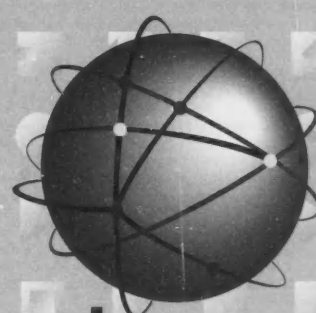
cial EDI Implementation" and "Hop on the Highway: Electronic Commerce on the Internet." Fees: \$850, \$750 for early registration. Contact: Financial EDI Conference Registrar National Automated Clearing House Association, Baltimore, Md. (703) 742-9190.

**Second Annual Display Manufacturing Technology Conference.** Santa Clara, Calif., Jan. 31-Feb. 2 — Contact: Mark Goldfarb, Palisades Institute for Research Services, Arlington, Va. (800) 787-7477.

**Chargeback for Centralized and Distributed Processing.** Las Vegas, Feb. 1-3 — Contact: Financial Management for Data Processing, San Francisco, Calif. (415) 731-3706.

## FEB. 5-11

**Demo '95.** Palm Springs, Calif., Feb. 5-8 — The conference will include product demonstrations, product premieres and head-to-head product showdowns. Contact: InfoWorld Editorial Events, San Mateo, Calif. (800) 633-4312.



# WebWorld

## Multimedia On The Internet

Orlando, FL • January 30-February 1, 1995  
Santa Clara, CA • April 19-21, 1995\*

### 3 COMPREHENSIVE CONFERENCES

- **Living In the Web:**  
User Perspectives
- **Building Webs:**  
Access and Information Providers
- **Weaving In Information Space:**  
Developing Web Environments

### KEY PRESENTERS

EVENT CHAIR: Jay C. Weber, EIT  
Enterprise Integration Technologies


- Marc Andreessen,  
*Netscape Communications*
- Dave Raggett, *Hewlett-Packard*
- Gary Bolles, *Inter@ctive Week*
- Darren New, *First Virtual Holdings Incorporated*
- David Taylor, *Intuitive Systems*
- Brian Behlendorf, *Hot Wired*
- Allan Schiffman, *EIT*
- Dale Dougherty, *O'Reilly and Associates*
- Gail Grant, *Open Market*

### SPECIAL ADDED BONUS

Attend **EMAIL WORLD®** - The Mail Enabled Technologies Conference and Exposition running concurrently.

For more information please access the World-Wide Web at URL  
<http://www.oec.com/DCI/>  
or call DCI at (508) 470-3880

Sponsored by



FSCWC00

# Computerworld Editorial Calendar

January - March, 1995

Issue Dates			Ad Closings Color* B&W		Editorial Features & Custom Publications	- Show Distribution & Ad Readership Study Issues	
Dec. 26- Jan. 2	Dec. 9	Dec. 16	<b>Annual Forecast Issue:</b> A look at key issues and trends that will impact IS Professionals in 1995.				
Jan. 9	Dec. 23	Dec. 30	<b>CW Guide To: Color Printers</b> Choosing the right printer: With numerous printing technologies (dye sublimation, thermal-wax, color laser and ink-jet) available today, what kind of printer best fits the needs and budgets of business users on LANs and corporate systems? How do you cost justify the move to color? <b>Buyers' Satisfaction Scorecard:</b> Color printers for large organizations from market-leading manufacturers. <b>Firing Line:</b> A color printer offering the latest technology such as dye sublimation or best alternative.				
Jan. 16	Dec. 30	Jan. 6	<b>Closer Look:</b> Client/Server Human Resource Applications				Starch Study
Jan. 23	Jan. 6	Jan. 13	<b>CW Guide To: Enterprise Network Management</b> How much can you manage?: How far have the leading enterprise network management platforms progressed in supporting the diverse platforms and functions needed by users on LANs and WANs across the organization? <b>Buyers' Satisfaction Scorecard:</b> Dominant network management platforms from major vendors <b>Firing Line:</b> The latest most feature-rich enterprise network management alternative.			ComNet Washington D.C. 1/23 - 1/26	
Jan. 30	Jan. 13	Jan. 20	<b>CW Guide To: RAID Storage Devices</b> Large systems RAID, where does it fit in? With new RAID systems on the market packing incredible amounts of storage capacity in shrinking footprint space, the choices are better than ever. Should your DASD be replaced with RAID or should RAID be an adjunct to your current investment? <b>Buyers' Satisfaction Scorecard:</b> The market leading large systems RAID products. <b>Firing Line:</b> The latest RAID system for enterprise users.				
Feb. 1	Dec. 7		<b>Computerworld Client/Server Journal</b> <b>Vertical Market Focus:</b> Banking <b>Section Feature:</b> Product Focus on Networking			Software Developers' Conference Networks Expo UniForum Object World Interop + Network	Harvey Study
Feb. 6	Jan. 20	Jan. 27	<b>Special Quarterly Report:</b> Re-engineering the Workplace				
Feb. 13	Jan. 27	Feb. 3	<b>CW Guide To: PC Communications Software</b> Making connections: What are the pros and cons of various methods and products that provide remote access links to LANs and servers? How do they deal with security and reliability issues? What are the most cost effective methods? <b>Buyers' Satisfaction Scorecard:</b> Market-leading PC remote access software packages. <b>Firing Line:</b> Latest remote access software for server connections.			Software Developers' Conference, San Francisco 2/13 - 2/17 Networks Expo, Boston 2/14 - 2/16	
Feb. 20	Feb. 3	Feb. 10	<b>Closer Look:</b> Videoconferencing				
Feb. 27	Feb. 10	Feb. 17	<b>CW Guide To: Notebook Computers</b> The price of portability? Users are most concerned about the key features of portability - notebook size, weight and battery life. Which vendors offer the best portability, reliability and support. <b>Buyers' Satisfaction Scorecard:</b> Notebooks from the top vendors based on market strength, reliability & support. <b>Firing Line:</b> Latest multimedia-enabled notebook from a leading vendor <b>Custom Publication:</b> Manufacturing White Paper: Defining Enterprise Resources Planning (part 1 of 4-part Manufacturing Series)				Starch Study
March 6	Feb. 17	Feb. 24	<b>Closer Look:</b> Enterprise Software Distribution Tools <b>Custom Publication:</b> White Paper on Object Technology				
March 13	Feb. 24	March 3	<b>CW Guide To: RISC Servers</b> Server Strategies: Short-term server purchases may be a matter of price/performance, but which systems make the most sense as long-term strategic platforms? Should users target different servers for every application or standardize on the best alternative? <b>Buyers' Satisfaction Scorecard:</b> Market leading RISC servers. <b>Firing Line:</b> Latest RISC server from a top vendor. <b>Custom Publication:</b> White Paper on Enterprise Application Development (part 1 of 4-part Enterprise Software Directions Series)			UniForum Dallas 3/14 - 3/16	Starch Study
March 20	March 3	March 10	<b>Closer Look:</b> Object-oriented Development Tools			Object World Boston 3/20 - 3/23	
March 27	March 10	March 17	<b>CW Guide To: LAN Management</b> Vendors continue to add more sophisticated management capabilities to their peer-to-peer LAN management packages. How well do they address performance, security and tracking issues. How do these packages fit under the companywide network management umbrella? <b>Buyers' Satisfaction Scorecard:</b> Market-leading peer-to-peer LAN management packages. <b>Firing Line:</b> The latest software to consolidate LAN management for the organization.			Interop + Network Las Vegas 3/28 - 3/30	

Editorial contacts (508) 879-0700 Management Features: Allan Alter, Closer Look: James Connolly, CW Guide Articles: Michael Sullivan-Trainor, Buyers' Satisfaction Scorecard: Michael Sullivan-Trainor, Firing Line: Kevin Burden, Re-engineering the Workplace: Joe Maglitta  
Custom Publications are written independently of the Computerworld editorial staff. For advertising information contact Carolyn Novack at (508) 879-0700.  
\* Includes ads within special editorial features and premium positions.



# Computerworld Editorial Calendar

April - June, 1995

Issue Dates	Ad Closings Color* B&W	Editorial Features & Custom Publications	Show Distribution & Ad Readership Study Issues
April 1	Feb. 8	<b>Computerworld Client/Server Journal</b> <b>Vertical Market Focus:</b> Health Care <b>Section Feature:</b> Product Focus on Databases	AIIM Comdex Spring/ Windows World SIM Spring Conference DB Expo Harvey Study
April 3	March 17	March 24 <b>Closer Look:</b> PC Spreadsheets Custom Publication: Windows World Open Supplement	
April 10	March 24	March 31 <b>CW Guide To: Document Management</b> Imaging and e-mail packages offer varying approaches to document management. Which approach is the most cost-effective and best fits your company's needs? How easily can documents be moved across platforms and applications? <b>Buyers' Satisfaction Scorecard:</b> Image processing packages for document mgmt. from the leading vendors. <b>Firing Line:</b> Evaluation of latest software conforming to new open document standards.	AIIM San Francisco 4/11 - 4/13
April 17	March 31	April 7 <b>Closer Look:</b> IBM AS/400	Starch Study
April 24	April 7	April 14 <b>CW Guide To: 32-BIT Operating Systems</b> Preparing your organization for 32-bit operating systems: How well do the leading products support enterprise requirements such as reliability, technical support and standards in their present and future products and strategies? <b>Buyers' Satisfaction Scorecard:</b> Operating system face-off: 32-bit systems. <b>Firing Line:</b> Latest 32-bit operating system for corporate users.	Comdex Spring/ Windows World Atlanta 4/24 - 4/27
May 1	April 14	April 21 <b>IS Management Special:</b> CEO Survey CEOs evaluate the role of technology in their companies and their relationship with IS. <b>Special Quarterly Report:</b> Re-engineering the Workplace	SIM Spring Conference, Phoenix 5/1 - 5/3 DB Expo, San Francisco 5/1 - 5/5 Executive Technology Summit Phoenix 5/3 - 5/5
May 8	April 21	April 28 <b>CW Guide To: Systems Integration</b> Which systems integrators can best provide support for client/server projects? What guidelines should be used to evaluate them? How should the decision be made? <b>Buyers' Satisfaction Scorecard:</b> User satisfaction ratings of top systems integrators with client/server capability. <b>Firing Line:</b> Spotlight on major client/server systems integration project involving one or more leading vendors.	Starch Study
May 15	April 28	May 5 <b>Closer Look:</b> On-line Information Services	
May 22	May 5	May 12 <b>CW Guide To: Database Development Tools</b> With database tools coming from multiple directions (database vendors, application builders, and middleware makers), which tool set makes the most sense for your environment? Is a "best of breed" approach feasible and cost effective? <b>Buyers' Satisfaction Scorecard:</b> The market leading database development tools. <b>Firing Line:</b> High profile hot new development tool.	
May 29	May 12	May 19 <b>Closer Look:</b> Windows Utilities	
June 1	April 12	<b>Computerworld Client/Server Journal</b> <b>Vertical Market Focus:</b> Retail <b>Section Feature:</b> Product Focus on Development Tools	Mobile World Int'l DB2 Users Group Client/Server World PC Expo Harvey Study
June 5	May 19	May 26 <b>CW Guide To: Application Suites</b> Software suites that give you three, four or five integrated applications are to "suite" to pass on when individual packages add up to much higher prices. But there are some difficulties in administering suites on a network and meeting individual user preferences. How do you balance a suite strategy with a desire for "best of breed" applications? <b>Buyers' Satisfaction Scorecard:</b> Application suites for the enterprise from leading vendors. <b>Firing Line:</b> Evaluation of latest application suite as part of an enterprise implementation. Custom Publication: Manufacturing White Paper: Supply-chain Management (part 2 of 4-part Manufacturing Series)	Mobile World Dallas 6/6 - 6/8
June 12	May 26	June 2 <b>Closer Look:</b> Wireless Local Area Networks Custom Publication: White Paper Enterprise Systems & Network Management (part 2 of 4-part Enterprise Software Directions Series)	Int'l DB2 Users Group Orlando, FL 6/11 - 6/15 Client/Server World, Boston 6/13 - 6/15 Starch Study
June 19	June 2	June 9 <b>CW Guide To: PC Servers</b> How can your organization benefit from PC-based servers? Can PC servers deliver the same reliability and price/performance as RISC-based systems? What are the risks involved? <b>Buyers' Satisfaction Scorecard:</b> Market leading Intel-based PC servers. <b>Firing Line:</b> The latest PowerPC-based server or best alternative.	PC Expo New York City 6/20 - 6/22
June 26	June 9	June 16 <b>IS Management Special</b>	

# In Depth

## SOUND

# The MAC

**AT ISSUE:** *Is the Mac a serious business machine?*

*No way, says a PC backer, claiming a lack of Mac applications and vendor support. But a proponent says the PowerPC chip and multimedia features make the Mac a powerful tool.*

BY DAN DOEHLER

Apple Computer, Inc.'s Macintosh never was, is not now and never will be a smart decision for business environments.

I'm not alone in this assessment. All you have to do is pick up a trade newspaper and read about how major Macintosh business sites — The Boeing Co., Ernst & Young and Visa International, Inc. — are phasing out their Mac environments.

The Mac experiment at my company has failed, too. Our Macintoshes, chosen six to eight months ago by our training department to train salespeople, are gathering dust.

Currently, Apple and rabid Macintosh users maintain that the PowerPC will turn the aging Mac into a force to be reckoned with. Unfortunately, this latest attempt to bolster sales is only going to make things worse.

I agree with industry guru Ted Prince, who argues that the PowerPC is immediately useful only if you run native software on it for high-end, graphics-type programs, which rules out most of the general business populace. Users shouldn't hold their breath waiting for native software for their favorite applications, he says.

And Windows 95, the next version of Windows, may really make Apple whimper, with what is essentially an updated version of the Macintosh operating system. Good old Windows, with all its kludginess, is already hurting the Mac in business settings, Prince points out. Apple's headaches only mount when you bring in Microsoft Corp.'s slick, Macintosh-like Windows 95, which I got a chance to see during a demonstration at Comdex/Fall '94. That program is bound to do some damage. Arrivederci, Mac baby.

The PowerPC has been taking a beating against Intel Corp. Pentium-based machines in laboratory tests. In one test by *PC World*, an Atrionics International, Inc. processor outperformed the 66-MHz Power Macintosh 7100 in all areas except scrolling a spreadsheet. And the Power Macintosh machine costs \$800 more! Worse performance at a higher price. Hmmm, that's not something I'm looking for.

Why change when you have everything you want in the Intel processor? I get reliability and a proven track record with my PCs. I also feel secure because many vendors support the Windows operating environment. Apple's operating system gets support only from Apple. At one point, Apple had major developers creating software only for it. Now these very companies are developing software for other operating systems.

### Aging system, limited apps

I just can't see limiting myself to an aging operating system with a new chip and maybe 200 applications. I'd rather have access to the best continually improving operating system — Windows — and to the thousands of applications that run with it.

At Comdex, I experienced firsthand the difference in numbers between software available for Apple machines and the software available for Intel-based machines. In looking across the immense show floor, there were little Windows trademarks stretched as far as I could see in all directions. Apple software was there, of course, but it didn't have the market presence on which I'd like to base my business.

Doehler, page 98

Doehler is IS manager at Del Papa Distributing Co., a wholesaler of Anheuser-Busch products in Texas City, Texas.

If you want to  
gamble your  
business, buy Mac



DOEHLER: Windows 95 will multiply Apple's headaches

# is dead for business

BY MATT GHOURDJIAN

Information systems managers who have limited experience with Apple Computer, Inc.'s Macintosh have stated three main reasons for not buying the Macintosh: it costs less to acquire basic PC hardware, you can purchase PCs from multiple vendors (while you can get the Macintosh only from Apple) and there is more software available on the PC platform.

Those reasons don't have merit anymore.

The Macintosh now holds a substantial price/performance advantage over comparably equipped PCs since the introduction of the Centris-class computers in February 1993, according to a report by Ingram Micro, Inc.'s laboratory in Santa Ana, Calif. High-quality on-board video, built-in 16-bit sound and other services make it price-competitive right out of the box.

The machine is also cheaper to own. Gartner Group, Inc. found in its recent annual survey that the five-year cost of owning a Macintosh is \$6,000 less than that of owning a comparable Windows-based machine. Those savings stem from Macintosh's short learning curve, which translates into lower training costs. People use this machine.

With the Power Macintosh, the advantage will widen. The Power Macintosh is the only true multiple personality system, running DOS, Windows and Apple OS and, by next year, PowerOpen (Unix), OS/2 and Taligent, Inc.'s Taligent. Also by next year, IS chiefs will be able to buy a Mac from IBM and Motorola, Inc., which will result in more competition and innovation.

As for the complaint that there are few Macintosh programs on the market, that's changing. The difference in the number of Windows and Macintosh programs is insignificant, with most popular programs already available on both platforms.

## Users love it

The Macintosh's ease of use and intuitive nature puts it far ahead of the PC in empowering workers and increasing productivity. While the average user in today's PC environment is happy to master electronic mail and rudimentary word processing, the average Mac user at my firm uses 15 to 20 desktop productivity applications. Four years ago, it was a struggle to get a PC on the desk of senior partners at Howrey & Simon. Today, all of them have Macintoshes on their desks and at home. Most carry PowerBooks when they travel.

If corporate IS managers were evaluated on how much end users used computers and how productive they were, you would see more Macintoshes and fewer PCs.

From an IS viewpoint, the Macintosh is easy to install and maintain. Because the Macintosh comes with high-speed networking and can be connected to existing networks with ease, it takes my IS staff less than 20 minutes to configure a new Mac and load all the software. We support 850 Macintoshes in three offices with only seven end-user support personnel.

The Mac has the PC beat in terms of market value, too. In April 1990, Apple introduced the Macintosh IIFX, around the same time IBM introduced PCs based on the Intel Corp. 1386 microprocessor. Today, according to United Computer Exchange, that Macintosh IIFX is worth about \$1,250, while a comparable PC is worth about \$225.

Ghourdjian, page 98

Ghourdjian is national director of technology at the law firm of Howrey & Simon, which has offices in Los Angeles and Washington.



GHOURDJIAN: Apple's operating system safeguards customers

PCs cost more,  
give you less  
than Macs

## In Depth: Is the Mac dead for business?

### Doehler

CONTINUED FROM PAGE 96

And the Macintosh software just plain costs more. For example, Microsoft's Excel for Windows costs \$299. You'll shell out \$100 more for the Apple version. That \$100 difference adds up pretty quickly if you happen to have a few thousand Macintoshes.

To give it a shot in the arm, perhaps, Apple is teaming with IBM to develop a new

hardware standard that will converge the IBM/Motorola, Inc. PowerPC Reference Platform with Apple's architecture into a new platform, known as AIM (Apple, IBM, Motorola). A better acronym for this union might be MIA — missing in action — because this new architecture

## SOUND

will reportedly not be available until 1996. It will miss its window of opportunity and

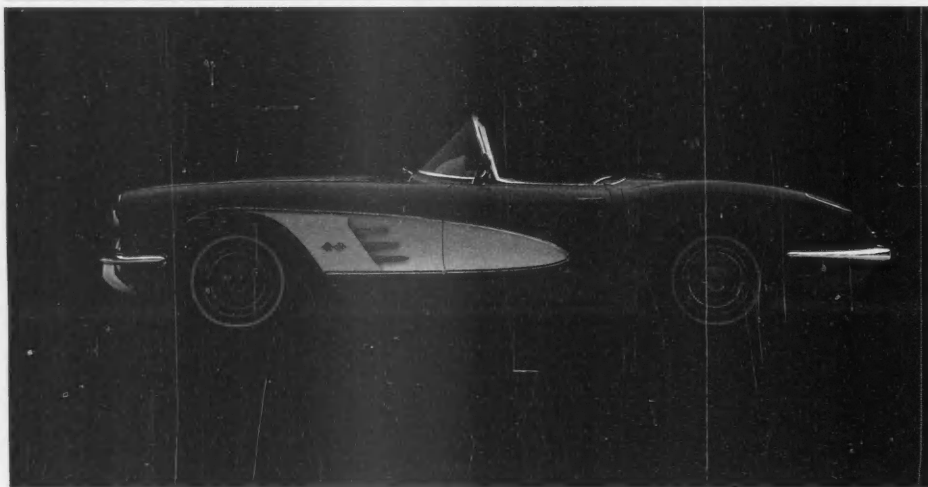
arrive too late to have any impact on Windows.

### PCs instead of Macs

In the end, Apple seems to be preaching to the converted with its Power Macintosh line. A recent report from Computer

Intelligence InfoCorp says that those corporate buyers most interested in Power Macintoshes are already those firmly established in Apple's camp — universities and schools. CI InfoCorp's monthly interviews of 30,000 end users reveal something just as disturbing: Even with the Power Macintosh launch, there still seems to be a gradual replacement of Macintoshes with Intel PCs, with no sign this trend is abating.

I'll keep my PCs, thank you. ■



## "Marathon buys one of these every month"

"We were skeptical about the savings. Even after we saw a live demonstration, we didn't think Marathon could save our classic Corvette dealership all that much money. But we figured we'd save at least enough to pay for the equipment and then keep some savings each month. So we installed a MICOM Marathon Data/Voice Network Server in our Saugus Massachusetts showroom and another in our new Pompano Beach, Florida facility.

Marathon let us route incoming calls between our locations for free.

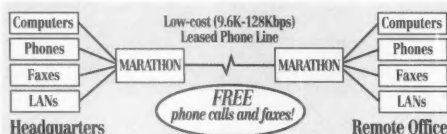
In just the first month, the savings paid for both Marathons. And every month since, Marathon has saved us the equivalent of a '58 Vette.

I'm Tony Visone of Visone Motors. I sell investments you can use and enjoy. And while a Marathon can't give you the same thrill as a vintage Corvette in your garage, it's an investment that can bring a smile to your face every month. "

Whether you have two or 250 locations, Marathon delivers all communications on one line. Ask for a free brochure today.

Call toll-free for the certified Marathon Distributor in your area (800) MICOM AD [642-6623] ext. 1034 or (805) 583-8600. 24-hour fax (805) 583-1997.

"The sooner you call, the sooner you can start investing in something you really want, instead of phone company toll charges. "



**MICOM**  
Products that pay for themselves™

Trademarks are property of their respective owners.

### Ghourdjian

CONTINUED FROM PAGE 97

The huge gap in value between the two machines is directly attributable to Apple's solid support in its operating systems for older machines. Even in the company's move to System 7.5 and RISC-based PowerPC microprocessors, it safeguards its customers. Apple provides upgrades for most current machines to the PowerPC platform, while System 7.5 will run on just about any Macintosh ever built. That gives IS managers protection from obsolescence.

Next summer, when PC users get their first look at Windows 95, the next version of Windows, Power Macintosh users will see the new Apple operating system 8.0, code-named Copland. With the release of Copland and its new microkernel design, Apple will deliver pre-emptive multitasking and full-protected memory. In addition, the operating system will sport a completely new user interface that will challenge the DOS/Windows world.

Windows 95 carries the past with it because it's written in native Intel code and still has 16-bit calls. Copland, on the other hand, is completely rewritten to take advantage of the PowerPC. It readies users for the migration to the 64-bit operating environment. In the next two years, armed with this new performance edge, the Macintosh will lead the way in communication technologies such as voice recognition, multimedia, telephony and collaboration.

With more than 500 native Power Macintosh software programs now shipping, it is safe to say the computer industry has just witnessed one of the smoothest hardware and software transitions in history.

Conventional wisdom might say the safe decision is to buy PC; after all, 85% of the market does. But during the next 18 months, as the Macintosh platform moves to the PowerPC 604 and 620 microprocessors and the price/performance gap widens between the Power Macintosh and the PC, I suspect there will be more than one IS manager who will wonder why he didn't buy Mac.

But even more important, the PC world faces the limited life of the CISC architecture and Windows. Meanwhile, the Power Macintosh is positioned for a long period of growth and stability.

Better price/performance, cheaper to own, much easier to use and plugged in to the future. Is the Macintosh dead as a business machine? Hardly. ■





# The COMPUTERWORLD Comedy Store

**Sale  
50%  
Off!\***

**"Oops -- I forgot  
to log off again."**

One-size fits all. 50/50  
blend, cotton/polyester.  
Made in U.S.A.  
T-shirt ... ~~\$18.99~~  
Sweatshirt ... ~~\$24.99~~

*Now only*  
**\$7.99**

*Now only*  
**\$12.49**



**"Don't panic!  
Just push the  
escape key."**

White ceramic 10 oz.  
mug ... **\$7.99**

**"What's the digital  
bathroom scale doing  
in my laptop case?"**

Roomy 100% natural cotton  
canvas with webbed straps,  
14" x 9" ... ~~\$12.49~~

*Now only*  
**\$6.49**



**"What's the digital  
bathroom scale  
doing in my  
laptop case?"**

32 oz. Sip-it Bottle with  
insulator ... ~~\$7.99~~

*Now only*  
**\$3.99**



*Now only*  
**\$8.49**

**"Don't panic!  
Just push the  
escape key."**

Durable and roomy,  
16" x 9" black cotton  
canvas duffle bag -  
includes sturdy  
webbed straps and  
zipper. Made in  
U.S.A. ... ~~\$16.99~~



**"There! There!  
I swear, it just  
moved again!"**

Mousepad, 8" x 7 1/2"  
... **\$7.99**

\*selected items only

**The COMPUTERWORLD Comedy Store** To order: Fax 508-626-8258 or Call 1-800-222-7545.

Item	Price	Quantity	Amount
C1AD3 Mug	<b>\$7.99</b>		
C2AD3 Sip-it	<b>\$3.99</b>		
C3AD3 Mousepad	<b>\$7.99</b>		
C4AD3 T-shirt	<b>\$7.99</b>		
C5AD3 Sweatshirt	<b>\$12.49</b>		
C6AD3 Duffle	<b>\$8.49</b>		
C7AD3 Tote Bag	<b>\$6.49</b>		
<b>Shipping &amp; Handling</b> AVOID DELAY! Please include Shipping & Handling. If your merchandise subtotal is: UP TO \$10.00 ..... \$2.50 \$10.01 - \$20.00 ..... \$3.95 \$20.01 - \$35.00 ..... \$4.95 \$35.01 - \$50.00 ..... \$6.95 \$50.01 - \$100.00 ..... \$9.95 OVER \$100.00 ..... \$13.95 * For Canada and International orders, please add \$5.00 per item for Shipping and Handling.			
		Subtotal	
		Shipping & Handling**	
		Sales Tax**	
		Total	

MAIL TO: **COMPUTERWORLD**  
P.O. Box 9171  
Framingham, MA 01701 U.S.A.  
Attn: Product Fulfillment  
(Monday - Friday 8:30-5:30 EST)

SHIP TO:

Name \_\_\_\_\_

Company \_\_\_\_\_

Address (Please use street address; UPS does not deliver to P.O. Box)

City \_\_\_\_\_ State/Province \_\_\_\_\_ Zip/Postal Code \_\_\_\_\_

Country \_\_\_\_\_  
( ) \_\_\_\_\_  
Daytime Phone \_\_\_\_\_

Method of Payment (in U.S. dollars only)

Check or Money order payable to: **COMPUTERWORLD**

☐ VISA ☐ MC ☐ AMEX

Card No.

\_\_\_\_\_

Exp. Date

Signature

Your credit card will not be charged until your items are shipped.

*Thank you for your order!*

**COMPUTERWORLD**

The Newspaper of IS

\*\* Residents of MA, CA, NJ, GA and DC, add applicable sales tax. Canada residents add G.S.T.

# Computer Careers

## EDI gatekeepers

Management of **electronic data interchange** partnerships may not fall onto IS' shoulders, but technical professionals can contribute in significant ways

By Leslie Goff

Although electronic data interchange (EDI) may rely on data and communications technologies, the information systems department's role is generally limited to that of liaison, gatekeeper and translator.

IS staffers must understand the technology's impact on how business is conducted, but their work centers around the smooth, cost-efficient, day-to-day operation of EDI at their companies, not the management of EDI partnerships.

"The value [that information technology] provides is ensuring we have the most cost-reliable communications and that we map the data in a way that adheres to the standards," says Betty Zimmerman, manager of projects at Texaco, Inc. and chairman of the Gulf Coast EDI User Group, both in Houston.

### Coordinator's role

An EDI coordinator, as the IS contact is usually designated, must be grounded in the business processes supported and affected by EDI. The person is an integral contributor to EDI partnerships but remains largely a supporting player.

"Once you set up the electronic link with the trading partner, you don't really

deal with them, unless you're upgrading or responding to a problem," says Linda Swatosh, a senior analyst/EDI coordinator at Detroit Edison in Michigan. "The role should be transparent unless there's a problem."

But that shouldn't minimize IS's involvement in EDI. Responsibility for EDI operations within IS can fall on one or

several shoulders, depending on the volume of a company's EDI transactions and the overall IS structure (see story page 101). However duties are delegated, the job covers five principal areas: maintaining communications links; enforcing EDI standards; maintaining EDI translation software; mapping data; and EDI applications development, integration and

support.

For example, Detroit Edison is using EDI for purchasing and outbound billing and is actively launching other applications. Swatosh is responsible for the utility's mainframe software, including IBM's Data Interchange, an EDI translation package.

But with each EDI project, Swatosh has gradually turned most of the other work over to the users. "Our first application was purchasing, and I had a purchasing rep come over to IS for a while," Swatosh says. "They took the expertise back with them. I've continued that with more departmental EDI reps."

Larger EDI users tend to take a more team-oriented approach. Texaco, Zim-  
EDI gatekeepers, page 101

## Study the standards

**M**anaging EDI transmissions without keeping abreast of your industry's EDI standards is akin to driving cross-country without a map. If you want to demonstrate IS's value to the EDI partnership, at least participate in a regional EDI user group if not in an industry-specific group.

"Those are the only forums you have for addressing issues relative to the improper use of the standards," says Paul Lemme, vice president of professional services at TSI International Software, an EDI software and services firm in Wilton, Conn. "EDI is designed to eliminate the need for partner-by-partner specifics. If your company

**The Data Interchange Standards Association, Inc. can put you in touch with industry-specific EDI user groups. Call (703) 548-7005.**

or its partners don't adhere to the rules, you're forced into a proprietary relationship, and the benefits of EDI are lost."

Industry-specific EDI standards organizations work to influence ANSI X.12 standards and help members conform to industry implementations.

"The standards change every four months, and most of the user communities [update] once a year," Lemme says. "It's important to stay current or the relationship becomes a proprietary one."

Regional and local EDI user groups tend to be more informal than standards organizations, offering speakers, roundtable discussions and networking opportunities. More than 30 of these groups are scattered coast-to-coast. (For a complete guide to EDI user groups and standards organizations, see "EDI idea factories," CW, Nov. 29, 1993.)

### CDI Information Services

DIVISION OF CDI CORPORATION

is one of the leading providers of professional services. Current requirements exist for a variety of skills including:

#### EAST

Available positions include:  
PA, VA, KY, WV,  
MD, Wash., DC

- \* PowerBuilder
- \* Oracle, Sybase
- \* IMS DB/DC DB/2
- \* GUI, MOTIF
- \* C, C++, UNIX

Send Resumes to:

14120 Parke Long Court  
Suite 204 - CW  
Chantilly, VA 22021  
Ph: (703) 222-0700  
Fax: (703) 222-7326

#### SOUTHEAST

Available positions include:  
NC, FL, GA

- \* UNIX, OS/2, C, C++
- \* SmallTalk
- \* Oracle, Informix, Sybase
- \* DB2, Ideal, IMS, COBOL II
- \* Telephony S/W Development
- \* UNIX System Administrator
- \* Network Administrator

Send Resumes to:

S.E. Regional Recruiting - CW  
1150 S.E. Hayward Road  
Cary, NC 27511  
Fax: (919) 467-7653  
cdi@salco.cary.nc.us

#### MIDWEST

Available positions include:  
TX, CO, NE, MO

- \* UNIX System Administrators
- \* UNIX Programmers
- \* AIX, OS/2 Software Engineers
- \* IMS DB2, COBOL, CICS
- \* Switching Systems, Cellular and PDAs
- \* OO-Soft, C++, SmallTalk

Send Resumes to:

9035 Wadsworth Blvd.  
Suite 2700 - CW  
Westminster, CO 80021  
Ph: (800) 254-7314  
Ph: (303) 422-6668  
Fax: (303) 423-4542  
cdi@netcom.com

#### WEST

Available positions include:  
AZ, CA, UT, OR

- \* IMS DB/DC, DB2, COBOL
- \* MAC PAC ID
- \* PowerBuilder
- \* Windows, GUI, C
- \* Oracle, SQL, Ingres, Sybase
- \* COBOL CICS, DB2

Send Resumes to:

2323 W 14th Street  
#216 - CW  
Tempe, AZ 85281  
Ph: (800) 878-9686  
Fax: (602) 968-0811  
cdi.corp@ramp.com

### CLINICAL PROGRAMMER/ANALYSTS

Immunex Corporation, a Seattle-based biopharmaceutical company focused on the research, development, manufacture, and marketing of products to treat immune system disorders, is seeking two suitably qualified Clinical Programmer/Analysts for the Biometrics Department.

The successful candidates will be responsible for the preparation of data tables and listings, leading the development of advanced programming applications and automated production programs, optimizing the efficient use of computing resources and the development and debugging of computing procedures in the SAS programming language.

A BS degree in Statistics along with a minimum of 3 years programming or systems analysis work experience, or alternatively a MS degree in Statistics with 1 year of programming or systems analysis experience is required. The successful candidate must be in a pharmaceutical industry setting and candidates should have at least 1 year of work experience in SAS database structures and programming techniques. Experience may be gained concurrently.

Immunex Corporation offers competitive salaries (range for this position \$44,000 to \$50,000) and an excellent benefits package. For consideration, please send resume, with cover letter indicating job #7465.232 to: Immunex Corporation, 51 University Street, Seattle, WA 98101. Immunex Corporation is an equal opportunity employer.

Immunex

### Carolinas/Southeast

POWERBUILDER, PL/SQL, JAVASCRIPT, PERL, COBOL, C, C++, ORACLE, SYBASE, INFORMIX, DB2, IMS, DB/DC, DB/2, GUI, MOTIF, UNIX, OS/2, AIX, S/390, S/370, S/360, S/315, S/3090, S/3091, S/3092, S/3093, S/3094, S/3095, S/3096, S/3097, S/3098, S/3099, S/3100, S/3101, S/3102, S/3103, S/3104, S/3105, S/3106, S/3107, S/3108, S/3109, S/3110, S/3111, S/3112, S/3113, S/3114, S/3115, S/3116, S/3117, S/3118, S/3119, S/3120, S/3121, S/3122, S/3123, S/3124, S/3125, S/3126, S/3127, S/3128, S/3129, S/3130, S/3131, S/3132, S/3133, S/3134, S/3135, S/3136, S/3137, S/3138, S/3139, S/3140, S/3141, S/3142, S/3143, S/3144, S/3145, S/3146, S/3147, S/3148, S/3149, S/3150, S/3151, S/3152, S/3153, S/3154, S/3155, S/3156, S/3157, S/3158, S/3159, S/3160, S/3161, S/3162, S/3163, S/3164, S/3165, S/3166, S/3167, S/3168, S/3169, S/3170, S/3171, S/3172, S/3173, S/3174, S/3175, S/3176, S/3177, S/3178, S/3179, S/3180, S/3181, S/3182, S/3183, S/3184, S/3185, S/3186, S/3187, S/3188, S/3189, S/3190, S/3191, S/3192, S/3193, S/3194, S/3195, S/3196, S/3197, S/3198, S/3199, S/3200, S/3201, S/3202, S/3203, S/3204, S/3205, S/3206, S/3207, S/3208, S/3209, S/3210, S/3211, S/3212, S/3213, S/3214, S/3215, S/3216, S/3217, S/3218, S/3219, S/3220, S/3221, S/3222, S/3223, S/3224, S/3225, S/3226, S/3227, S/3228, S/3229, S/3230, S/3231, S/3232, S/3233, S/3234, S/3235, S/3236, S/3237, S/3238, S/3239, S/3240, S/3241, S/3242, S/3243, S/3244, S/3245, S/3246, S/3247, S/3248, S/3249, S/3250, S/3251, S/3252, S/3253, S/3254, S/3255, S/3256, S/3257, S/3258, S/3259, S/3260, S/3261, S/3262, S/3263, S/3264, S/3265, S/3266, S/3267, S/3268, S/3269, S/3270, S/3271, S/3272, S/3273, S/3274, S/3275, S/3276, S/3277, S/3278, S/3279, S/3280, S/3281, S/3282, S/3283, S/3284, S/3285, S/3286, S/3287, S/3288, S/3289, S/3290, S/3291, S/3292, S/3293, S/3294, S/3295, S/3296, S/3297, S/3298, S/3299, S/3300, S/3301, S/3302, S/3303, S/3304, S/3305, S/3306, S/3307, S/3308, S/3309, S/3310, S/3311, S/3312, S/3313, S/3314, S/3315, S/3316, S/3317, S/3318, S/3319, S/3320, S/3321, S/3322, S/3323, S/3324, S/3325, S/3326, S/3327, S/3328, S/3329, S/3330, S/3331, S/3332, S/3333, S/3334, S/3335, S/3336, S/3337, S/3338, S/3339, S/3340, S/3341, S/3342, S/3343, S/3344, S/3345, S/3346, S/3347, S/3348, S/3349, S/3350, S/3351, S/3352, S/3353, S/3354, S/3355, S/3356, S/3357, S/3358, S/3359, S/3360, S/3361, S/3362, S/3363, S/3364, S/3365, S/3366, S/3367, S/3368, S/3369, S/3370, S/3371, S/3372, S/3373, S/3374, S/3375, S/3376, S/3377, S/3378, S/3379, S/3380, S/3381, S/3382, S/3383, S/3384, S/3385, S/3386, S/3387, S/3388, S/3389, S/3390, S/3391, S/3392, S/3393, S/3394, S/3395, S/3396, S/3397, S/3398, S/3399, S/3400, S/3401, S/3402, S/3403, S/3404, S/3405, S/3406, S/3407, S/3408, S/3409, S/3410, S/3411, S/3412, S/3413, S/3414, S/3415, S/3416, S/3417, S/3418, S/3419, S/3420, S/3421, S/3422, S/3423, S/3424, S/3425, S/3426, S/3427, S/3428, S/3429, S/3430, S/3431, S/3432, S/3433, S/3434, S/3435, S/3436, S/3437, S/3438, S/3439, S/3440, S/3441, S/3442, S/3443, S/3444, S/3445, S/3446, S/3447, S/3448, S/3449, S/3450, S/3451, S/3452, S/3453, S/3454, S/3455, S/3456, S/3457, S/3458, S/3459, S/3460, S/3461, S/3462, S/3463, S/3464, S/3465, S/3466, S/3467, S/3468, S/3469, S/3470, S/3471, S/3472, S/3473, S/3474, S/3475, S/3476, S/3477, S/3478, S/3479, S/3480, S/3481, S/3482, S/3483, S/3484, S/3485, S/3486, S/3487, S/3488, S/3489, S/3490, S/3491, S/3492, S/3493, S/3494, S/3495, S/3496, S/3497, S/3498, S/3499, S/3500, S/3501, S/3502, S/3503, S/3504, S/3505, S/3506, S/3507, S/3508, S/3509, S/3510, S/3511, S/3512, S/3513, S/3514, S/3515, S/3516, S/3517, S/3518, S/3519, S/3520, S/3521, S/3522, S/3523, S/3524, S/3525, S/3526, S/3527, S/3528, S/3529, S/3530, S/3531, S/3532, S/3533, S/3534, S/3535, S/3536, S/3537, S/3538, S/3539, S/3540, S/3541, S/3542, S/3543, S/3544, S/3545, S/3546, S/3547, S/3548, S/3549, S/3550, S/3551, S/3552, S/3553, S/3554, S/3555, S/3556, S/3557, S/3558, S/3559, S/3560, S/3561, S/3562, S/3563, S/3564, S/3565, S/3566, S/3567, S/3568, S/3569, S/3570, S/3571, S/3572, S/3573, S/3574, S/3575, S/3576, S/3577, S/3578, S/3579, S/3580, S/3581, S/3582, S/3583, S/3584, S/3585, S/3586, S/3587, S/3588, S/3589, S/3590, S/3591, S/3592, S/3593, S/3594, S/3595, S/3596, S/3597, S/3598, S/3599, S/3600, S/3601, S/3602, S/3603, S/3604, S/3605, S/3606, S/3607, S/3608, S/3609, S/3610, S/3611, S/3612, S/3613, S/3614, S/3615, S/3616, S/3617, S/3618, S/3619, S/3620, S/3621, S/3622, S/3623, S/3624, S/3625, S/3626, S/3627, S/3628, S/3629, S/3630, S/3631, S/3632, S/3633, S/3634, S/3635, S/3636, S/3637, S/3638, S/3639, S/3640, S/3641, S/3642, S/3643, S/3644, S/3645, S/3646, S/3647, S/3648, S/3649, S/3650, S/3651, S/3652, S/3653, S/3654, S/3655, S/3656, S/3657, S/3658, S/3659, S/3660, S/3661, S/3662, S/3663, S/3664, S/3665, S/3666, S/3667, S/3668, S/3669, S/3670, S/3671, S/3672, S/3673, S/3674, S/3675, S/3676, S/3677, S/3678, S/3679, S/3680, S/3681, S/3682, S/3683, S/3684, S/3685, S/3686, S/3687, S/3688, S/3689, S/3690, S/3691, S/3692, S/3693, S/3694, S/3695, S/3696, S/3697, S/3698, S/3699, S/3700, S/3701, S/3702, S/3703, S/3704, S/3705, S/3706, S/3707, S/3708, S/3709, S/3710, S/3711, S/3712, S/3713, S/3714, S/3715, S/3716, S/3717, S/3718, S/3719, S/3720, S/3721, S/3722, S/3723, S/3724, S/3725, S/3726, S/3727, S/3728, S/3729, S/3730, S/3731, S/3732, S/3733, S/3734, S/3735, S/3736, S/3737, S/3738, S/3739, S/3740, S/3741, S/3742, S/3743, S/3744, S/3745, S/3746, S/3747, S/3748, S/3749, S/3750, S/3751, S/3752, S/3753, S/3754, S/3755, S/3756, S/3757, S/3758, S/3759, S/3760, S/3761, S/3762, S/3763, S/3764, S/3765, S/3766, S/3767, S/3768, S/3769, S/3770, S/3771, S/3772, S/3773, S/3774, S/3775, S/3776, S/3777, S/3778, S/3779, S/3780, S/3781, S/3782, S/3783, S/3784, S/3785, S/3786, S/3787, S/3788, S/3789, S/3790, S/3791, S/3792, S/3793, S/3794, S/3795, S/3796, S/3797, S/3798, S/3799, S/3800, S/3801, S/3802, S/3803, S/3804, S/3805, S/3806, S/3807, S/3808, S/3809, S/3810, S/3811, S/3812, S/3813, S/3814, S/3815, S/3816, S/3817, S/3818, S/3819, S/3820, S/3821, S/3822, S/3823, S/3824, S/3825, S/3826, S/3827, S/3828, S/3829, S/3830, S/3831, S/3832, S/3833, S/3834, S/3835, S/3836, S/3837, S/3838, S/3839, S/3840, S/3841, S/3842, S/3843, S/3844, S/3845, S/3846, S/3847, S/3848, S/3849, S/3850, S/3851, S/3852, S/3853, S/3854, S/3855, S/3856, S/3857, S/3858, S/3859, S/3860, S/3861, S/3862, S/3863, S/3864, S/3865, S/3866, S/3867, S/3868, S/3869, S/3870, S/3871, S/3872, S/3873, S/3874, S/3875, S/3876, S/3877, S/3878, S/3879, S/3880, S/3881, S/3882, S/3883, S/3884, S/3885, S/3886, S/3887, S/3888, S/3889, S/3890, S/3891, S/3892, S/3893, S/3894, S/3895, S/3896, S/3897, S/3898, S/3899, S/3900, S/3901, S/3902, S/3903, S/3904, S/3905, S/3906, S/3907, S/3908, S/3909, S/3910, S/3911, S/3912, S/3913, S/3914, S/3915, S/3916, S/3917, S/3918, S/3919, S/3920, S/3921, S/3922, S/3923, S/3924, S/3925, S/3926, S/3927, S/3928, S/3929, S/3930, S/3931, S/3932, S/3933, S/3934, S/3935, S/3936, S/3937, S/3938, S/3939, S/3940, S/3941, S/3942, S/3943, S/3944, S/3945, S/3946, S/3947, S/3948, S/3949, S/3950, S/3951, S/3952, S/3953, S/3954, S/3955, S/3956, S/3957, S/3958, S/3959, S/3960, S/3961, S/3962, S/3963, S/3964, S/3965, S/3966, S/3967, S/3968, S/3969, S/3970, S/3971, S/3972, S/3973, S/3974, S/3975, S/3976, S/3977, S/3978, S/3979, S/3980, S/3981, S/3982, S/3983, S/3984, S/3985, S/3986, S/3987, S/3988, S/3989, S/3990, S/3991, S/3992, S/3993, S/3994, S/3995, S/3996, S/3997, S/3998, S/3999, S/4000, S/4001, S/4002, S/4003, S/4004, S/4005, S/4006, S/4007, S/4008, S/4009, S/4010, S/4011, S/4012, S/4013, S/4014, S/4015, S/4016, S/4017, S/4018, S/4019, S/4020, S/4021, S/4022, S/4023, S/4024, S/4025, S/4026, S/4027, S/4028, S/4029, S/4030, S/4031, S/4032, S/4033, S/4034, S/4035, S/4036, S/4037, S/4038, S/4039, S/4040, S/4041, S/4042, S/4043, S/4044, S/4045, S/4046, S/4047, S/4048, S/4049, S/4050, S/4051, S/4052, S/4053, S/4054, S/4055, S/4056, S/4057, S/4058, S/4059, S/4060, S/4061, S/4062, S/4063, S/4064, S/4065, S/4066, S/4067, S/4068, S/4069, S/4070, S/4071, S/4072, S/4073, S/4074, S/4075, S/4076, S/4077, S/4078, S/4079, S/4080, S/4081, S/4082, S/4083, S/4084, S/4085, S/4086, S/4087, S/4088, S/4089, S/4090, S/4091, S/4092, S/4093, S/4094, S/4095, S/4096, S/4097, S/4098, S/4099, S/4100, S/4101, S/4102, S/4103, S/4104, S/4105, S/4106, S/4107, S/4108, S/4109, S/4110, S/4111, S/4112, S/4113, S/4114, S/4115, S/4116, S/4117, S/4118, S/4119, S/4120, S/4121, S/4122, S/4123, S/4124, S/4125, S/4126, S/4127, S/4128, S/4129, S/4130, S/4131, S/4132, S/4133, S/4134, S/4135, S/4136, S/4137, S/4138, S/4139, S/4140, S/4141, S/4142, S/4143, S/4144, S/4145, S/4146, S/4147, S/4148, S/4149, S/4150, S/4151, S/4152, S/4153, S/4154, S/4155, S/4156, S/4157, S/4158, S/4159, S/4160, S/4161, S/4162, S/4163, S/4164, S/4165, S/4166, S/4167, S/4168, S/4169, S/4170, S/4171, S/4172, S/4173, S/4174, S/4175, S/4176, S/4177, S/4178, S/4179, S/4180, S/4181, S/4182, S/4183, S/4184, S/4185, S/4186, S/4187, S/4188, S/4189, S/4190, S/4191, S/4192, S/4193, S/4194, S/4195, S/4196, S/4197, S/4198, S/4199, S/4200, S/4201, S/4202, S/4203, S/4204, S/4205, S/4206, S/4207, S/4208, S/4209, S/4210, S/4211, S/4212, S/4213, S/4214, S/4215, S/4216, S/4217, S/4218, S/4219, S/4220, S/4221, S/4222, S/4223, S/4224, S/4225, S/4226, S/4227, S/4228, S/4229, S/4230, S/4231, S/4232, S/4233, S/4234, S/4235, S/4236, S/4237, S/4238, S/4239, S/4240, S/4241, S/4242, S/4243, S/4244, S/4245, S/4246, S/4247, S/4248, S/4249, S/4250, S/4251, S/4252, S/4253, S/4254, S/4255, S/4256, S/4257, S/4258, S/4259, S/4260, S/4261, S/4262, S/4263, S/4264, S/4265, S/4266, S/4267, S/4268, S/4269, S/4270, S/4271, S/4272, S/4273, S/4274, S/4275, S/4276, S/4277, S/4278, S/4279, S/4280, S/4281,

## EDI gatekeepers

CONTINUED FROM PAGE 100

merman says, has an information technology/EDI team responsible for the EDI infrastructure, translation and communications, while EDI applications fall under the province of business applications support.

Likewise, a centralized team at Southwestern Bell Telephone in St. Louis supports about 10 major EDI applications, maps the data and maintains the EDI communications links and translation software, says Susan Watson, electronic commerce function manager of information services and a founding member of the Greater St. Louis EDI Forum.

### No experience needed

Because EDI brings together a variety of IS specialties, you don't need an EDI project on your resume to join an EDI effort.

"Prior EDI experience is not required because we can do the EDI training and, typically, we wouldn't have a lot of people available" to choose from, Zimmerman says. But, "EDI applications experience definitely sets you apart from the crowd."

While knowledge of EDI standards and experience implementing them in your industry are a plus, all you really need is any combination of experience in the areas of applications development and support, telecommunications or mainframe software programming and excel-

## Value-adding jobs

**R**esponsibility for managing EDI partnerships tends to fall on the applications' users, but IS professionals can add value to the partnership. Of course, titles and positions vary with company size. For example, firms with only a few trading partners may have one EDI coordinator responsible for mapping and translation, application programming and day-to-day operations, including linking to new partners, says Dale Gordon, president of CommerceLink, an EDI recruitment firm in Tampa, Fla. Conversely, companies with thousands of partners may have one or two EDI coordinators, several programmer/analysts or business analysts and an EDI team leader.

### EDI coordinator:

Technical liaison between the company and its trading partners; responsible for day-to-day operations; assists in establishing trading partner agreements and service levels;

lent personal communications skills.

Watson, for example, says she looks for "a good [information technology] professional who has the technology base in translation software [and] IBM

mainframes — a good Cobol programmer. But, you're also on the phone a lot, and it's really important to be able to represent your company well."

**You don't need an EDI project on your resume to join the effort. A number of IS specialties will do. However, EDI applications experience definitely sets you apart from the crowd.**

mainframes — a good Cobol programmer. But, you're also on the phone a lot, and it's really important to be able to represent your company well."

### Knowing your limits

Zimmerman also favors strong data analysis skills. "When dealing with EDI, you may be proactive in changing the way you do business, but you can't impose those kinds of changes on the part-

ner's applications environment. In the partner relationship, you must be sensitive to the typical applications' limitations," she says. Electronic purchase orders, for example, are generally just automated versions of paper purchase orders, which allow only one name in each "ship to" field. While one company may modify this paper purchase order restriction to take advantage of the economies of scale of EDI, its trading partners may not.

Zimmerman notes that EDI coordinators must be able to deal with the implications of the various applications used by trading partners.

Zimmerman's example underscores the importance of having a business per-

spective in addition to solid technical skills. To move EDI support out of the shadows and into the footlights, EDI professionals on the information technology side must facilitate real change in how the company conducts business.

"Many EDI professionals think of themselves as technologists and don't think of the process they're supporting," says Barbara Reilly, research director for electronic commerce strategies at Gartner Group, Inc. in Stamford, Conn.

"People working to support the effort should be involved in the business process and understand it and should be acting as systems design types rather than pure technology/operations types," Reilly adds. "First look at the process and then at how to best incorporate electronic commerce into the process. Make EDI an enabler to change the process."

Goff is a free-lance writer in New York.

## CONSULTANTS

### Immediate Interviews

#### MAINFRAME

DB2/CICS • EDI • ADJO  
DB2 or CICS • IMS • IMS  
Natural 2 • Internal • VM  
Tandem • Runtis • AS 400  
ADW or IEF • CSP • HPS  
VTAM • APS • PL1  
AS400 Linux • CASE • DAL

#### CLIENT SERVER

Lotus Notes • VAX/ROB • Excel  
Powerbuilder • Informix • Banyan  
Market Data • Novell • Paradox  
SAP/R/3 • Oracle • Unix  
Lan/Wan • Sybase • Smalltalk  
Visual C++ • Access • C++  
Sys/Adm • TCP/IP • Mof  
Windows • Testing • MF/Cobol  
Windows NT • Vis Basic • OLE 2.0

**Robn Rogers Consulting**  
1212 6<sup>th</sup> Ave, 9th Fl, NYC 10016  
800-421-5158 212-921-1319  
Fax 212-382-4343

## TANDEM

Nationwide  
Opportunities  
for TANDEM  
professionals

800-959-3088

## Our World Is Expanding

Technology Consulting, Inc. is a dynamic and rapidly growing Software Development Firm with challenging assignments. We are a leader in application outsourcing. Current client projects and our regional development center require the following skills:

**CLIENT SERVER** - C++, Smalltalk, Visual Basic/C++, MS/Access, Oracle, SQL\*FORMS, Sybase, Powerbuilder, Windows SDK NT, Foxpro  
**AS400** - RPG400, COBOL  
**MAINFRAME** - COBOL, CICS, IMS DB/DC, DB2, Natural, Construct, INFORMIX, EDI, UNISYS, TIP/DMS

**Arthur Andersen's DCS Package**  
TCI offers competitive salaries, attractive benefits, and relocation assistance. For consideration, send resume or call: 502-589-3110.

**TCI TECHNOLOGY CONSULTING INC.**

1830 Meindinger Tower, Louisville, KY 40202 FAX: 502-589-3107

## Mississippi State University

### Computing Professionals

Mississippi State University is seeking applications for immediate openings within Administrative Computing Services for positions such as: Computer Programmer, Programmer Analyst, Senior Programmer Analyst, and Systems Analyst. Minimum qualifications include:

#### Computer Programmer:

Bachelor's degree in a computer related field and one year related work experience.

#### Programmer Analyst:

Bachelor's degree in a computer related field and two years of programming experience.

#### Senior Programmer Analyst:

Bachelor's degree in a computer related field and three years of programming with at least one year as a programmer analyst.

#### Systems Analyst:

Bachelor's degree in a computer related field and four years of experience as a programmer or analyst with at least one year as a senior level.

All positions require working knowledge of Unix, strong programming skills, and experience with a relational data base management system (preferably Oracle); good verbal and written communication skills are essential. Desirable qualifications include previous experience developing systems in a Unix environment using Oracle, Cobol, and C. Responsibilities include analysis, development, implementation and support of application software for information systems. Applications will be accepted through January 16, 1998 or until positions are filled; interested candidates should submit a letter of application, resume, salary history, and the names of three references to: Denny M. Kemp, Mississippi State University, Computing Center and Services, P.O. Box CC, Mississippi State, MS 39762. MSU is an AA/EEO Employer

## CONSULTING

Control Solutions is offering long-term consulting opportunities locally and throughout the United States. Most positions pay between \$80,000-\$130,000 per year.

◆ORACLE FINANCIALS ◆VMS, PRO\*C  
REL 9 & 10 ◆IMS DB/DC  
◆ORACLE DBA ◆DB2 DBA  
◆TUXEDO, ORACLE ◆SUN, NFS/NIS  
◆ORACLE, MANUFACTURING ◆ORACLE CASE 5.0, 5.1  
◆ORACLE FINANCIALS DBA ◆VISUAL C++  
◆ORACLE REPORTWRITER 2.0 ◆MAC, DRIVERS  
◆COBOL, DB2 ◆UNIFACE  
◆OSF-1 SYS. ADMIN. ◆ALPHA AXP/OSF1, C  
◆MVS SYS PROGRAMMER ◆ADABAS DBA  
◆ORACLE V7 FORMS 4.0 ◆SAP R3  
◆VMS, SYS. ADMIN. ◆INFORMIX, UNIX, DBA  
◆ACMS, C, VMS ◆MVS, CSE, DB2

**Control SOLUTIONS**

Two Keswaydin Drive  
Salem, NH 03079-4875  
800-998-csi 1 (2741)

603-893-6776  
FAX: 603-893-4208  
email csinat@mv.mv.com



## Computer Careers Midwest

**PROGRAMMER ANALYST [2 openings]** (Ref: 119694) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' EDP systems; data analysis, data modeling & database administration for development of an integrated tax and royalty revenue processing system on IBM mainframe using CICS, DB2; analysis of data elements, creation & maintenance of a centralized data dictionary; data modeling, creation & maintenance of DB2 database objects for application development & testing support implementation of the database & application architecture; designing & developing computer software using CASE tools, & IBM 3090 or ES 9000, MVS or MVS/ESA operating system, DB2, TSO/ISPF, CICS, & VS COBOL II; Regs. Bach. in Comp. Sci., Computer Information Systems, Computer, Electrical or Electronic Engineering, Systems Analysis or its equiv., & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Team Leader or Consultant. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or related exp. in lieu of req'd ed. & exp. Part of the related exp. must include each of the following: using IBM 3090, ES 9000 mainframes, MVS/ESA, DB2, TSO/ISPF, CICS, COBOL II, CASE tools, \$56,136/yr. 40 hr/wk. 8:30a-5p.

**PROGRAMMER ANALYST [2 openings]** (Ref: 119694) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' EDP systems; data analysis, design, enhance, customize and test a FINANCIAL, TELECOM, BUSINESS ADMINISTRATION, integrated MANUFACTURING, DISTRIBUTION and UTILITY system, including redesign of its modules, database modifications, internal QA & system testing, customer support/services; Using RS6000, HP9000/3000, VAX 3400, PS/2 & PC at computers, AIX, HP-UX, VMS, ULTRIX, KENIX, UNIX, OS/2 & MS DOS operating system, LAN/WAN, TELCO ADMINISTRATOR, BUSINESS ADMINISTRATOR & software RDBMS/DBMS like SUPERLAYER, PRO-IV, SYBASE, PROKIT WORKBENCH (CASE) & GUI (WINDOWS, Visual Basic); Regs. Bach. in Comp. Sci., Computer Information Systems, Computer, Electrical or Electronic Engineering, Systems Analysis or its equiv., & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, System Executive or Consultant. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or related exp. in lieu of req'd ed. & exp. Part of the related exp. must include each of the following: system development & customer training using RS6000, HP9000, VAX, IBM PS/2, LAN/WAN, Superlayer, PRO-IV & Sybase, \$39,000/yr. 40 hr/wk. 8:30a-5p.

**PROGRAMMER ANALYST [2 openings]** (Ref: 127094) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' EDP systems; Lead Analyst for analysis, design & development of modules in a Freight Management System. The responsibilities include requirement study, analysis, process flow & data modeling, prototyping, development, implementation & system documentation; user interaction; using IBM 3090, MVS/ESA, DB2, CICS, VS COBOL II, SDF II, REXX, TSO, JES2, CLISTS, MS-WINDOWS & WORD PERFECT on IBM PC compatible; design & development of computer software using IBM 3090, DB2, COBOL & MVS operating systems; Regs. Bach. in Comp. Sci., Computer Information Systems, Computer, Electrical or Electronic Engineering, Systems Analysis or its equiv., & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Senior Executive or Consultant. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or related exp. in lieu of req'd ed. & exp. Must have some related exp. in each of the following: using IBM 3090, MVS/ESA, DB2, COBOL II, CLIST, JES2 & TSO, \$44,500/yr. 40 hr/wk. 8:30a-5p.

**PROGRAMMER ANALYST [2 openings]** (Ref: 119794) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' EDP systems; Ascertaining & defining clients requirements or problem areas utilizing technical expertise to provide solutions to clients' need, including analyzing, designing extensible software, developing and implementing computer software for clients, providing product support through the life cycle; project management; developing training material & training software engineers & users; include systems analysis & design using structured system analysis (data flow diagrams & structured charts) and object-oriented paradigm (Class-hierarchy diagram & object modeling) using CASE tools based on object-oriented methodologies; data modeling including development of relational database, graphical user interface development; software development & implementation using SUN-Workstation, SUNOS 4.x, SOLARIS, C, C++, X-Window, 386/486 IBM Compatible, MS-DOS, MS-Windows, X-VIEW, ORACLE AND UNIX, developing course materials and training software engineers and user; application of Object-Oriented Paradigm in development of Extensible Software; using IBM mainframe, mini computers; Regs. Bach. in Comp. Sci., Computer Information Systems, Computer, Electrical or Electronic Engineering, Systems Analysis or its equiv., & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Graduate Assistant, Fellow in Computing, Systems Specialist or Consultant. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or related exp. in lieu of req'd ed. & exp. Part of the related exp. must include each of the following: using SUN SPARC, 486/486 IBM Compatible Cmptr, UNIX, C, C++, ORACLE & CASE tools, \$50,000/yr. 40 hr/wk. 8:30a-5p.

**PROGRAMMER ANALYST [2 openings]** (Ref: 120194) Lead analyst for analysis, development and maintenance of the backend system for client-server insurance application. The responsibilities include analysis, specification writing, technical support, meeting with users to gather requirements and co-ordinate with all the members of the team. The application is developed using CICS, DB2, VSAM, ISPF/TSO, NETVIEW, REXX & CLISTS; development of computer software using IBM 3090 with MVS operating system, IDMS, ADSO, DESIGN/1, INSTALL/1, INGRES, COBOL, UNIX; Regs. Bach. in Comp. Sci., Computer Information Systems, Computer, Electrical or Electronic Engineering, Systems Analysis or its equiv., & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Lead Analyst or Consultant. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or related exp. in lieu of req'd ed. & exp. Related exp. must include, in whole or part, system development using IBM 3090 with IDMS, COBOL, CICS, VSAM, ISPF/TSO; & using ADSO & INGRES, \$48,000/yr. 40 hr/wk. 8:30a-5p.

**PROGRAMMER ANALYST [2 openings]** (Ref: 118194) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' EDP systems; analyze, design & develop computer S/W systems for manufacturing & industrial applications on IBM 9021 mft utilizing MVS/ESA, DB2, COBOL, CICS, IDMS, INTEREST, & ADVIEW CASE tools; carry out logical & physical design activities, data modeling & the implementation of system with work experience in Lotus, Base & Excel; software engineering & system development life cycle; extensive use of CASE product in analysis, design & implementation of system on ES-3090 mft; Regs. Bach. in Comp. Sci., Computer Information Systems, Computer, Electrical or Electronic Engineering, Systems Analysis or its equiv., & 9 mos. exp. in job offered or 9 mos. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer or Consultant. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or related exp. in lieu of req'd ed. & exp. Related exp. must include using IDMS, CICS, DB2, ADVI & COBOL \$41,000/yr. 40 hr/wk. 8:30a-5p.

**PROGRAMMER ANALYST [2 openings]** (Ref: 118294) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' EDP systems; enhance & customize a manufacturing package, including redesigning its modules including Sales Order, MRP MPS, Inventory, Billing, Sales Analysis, database modification, system testing & developing & integrating system using PRO-IV & Superlayer, COBOL, CICS, C for data conversion; using IBM-3090, HP-9000 and COBOL, CICS, PRO-IV; design & development of computer software for manufacturing control purpose; Regs. Bach. in Comp. Sci., Computer Information Systems, Computer, Electrical or Electronic Engineering, Systems Analysis or its equiv., & 3 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer or Consultant. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or related exp. in lieu of req'd ed. & exp. Related exp. must include, in whole or part, design & development of Material Resource Planning package using PRO-IV & Superlayer on HP-9000; also using IBM 3090, CICS, \$44,500/yr. 40 hr/wk. 8:30a-5p. Send resume to 7310 Woodward Ave., Rm 415, Detroit, MI 48202 & include Ref #, Employer Paid Ad.

Now, you can access  
U.S. careers on a  
regional on-line  
database for the Southwest!

See jobs from:

Cutler/Williams  
Dell Computer Corporation  
EDS  
and many more companies!



For questions about  
using the service to access jobs,  
call our information line  
at 1-800-343-6474, x524.

For information about posting jobs  
to the service, call F. Jay Savell  
at 1-800-343-6474, x184.

This service is available  
at no cost to job seekers.  
(Callers outside of Texas  
incur the cost of their telephone call.)

Jobs  
Online!



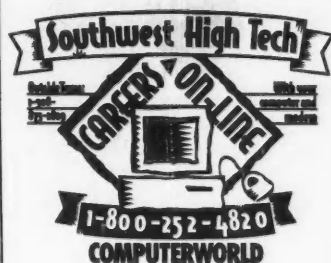


## Computer Careers Midwest

**Now you can  
access I.S.  
careers on a  
regional on-line  
database for  
the Southwest!**

**See jobs from:**

**Cutler/Williams  
Dell Computer Corporation  
EDS  
and many more companies!**



**For questions about  
using the service to access jobs,  
call our information line  
at 1-800-343-6474, x524.**

**For information about  
posting jobs to the service,  
call F. Jay Savell  
at 1-800-343-6474, x184.**

**This service is available  
at no cost to job seekers.  
(Callers outside of Texas  
incur the cost of  
their telephone call.)**

**Senior Programmer/Analyst:** Acts independently and direct activities of others to design, develop, integrate and implement multimedia knowledge-based computer systems using artificial intelligence techniques. Will use C, Smalltalk, LISP, and CLOS to implement systems in various platforms. Will use object-oriented programming language writing in CLOS and LISP to develop new systems code that is generic and reusable for complex projects. Requires B.S. degree in Computer Science. Also requires two year experience in the job to be performed or two years experience as a Programmer/Analyst. If experience in related field, entire experience must be in using LISP, CLOS, and C language to program multimedia knowledge-based programs using artificial intelligence techniques including writing of generic reusable code. Education to include completion of an artificial intelligence project using LISP and two courses using LISP. 40 hours per week, 9:00 a.m. to 5:00 p.m. Salary: \$37,800 per year. Must have proof of legal authorization to work permanently in the U.S. Please send two copies of resume to: Illinois Department of Employment Security, 401 S. State Street - 3 South, Chicago, Illinois 60625. Ref: Dennis Jones, Reference #V-L-12310. No Calls, An Employer Paid Ad.

**SYST. ANALYST.** Install & implement corporate LAN (MS NT Adv Server), design & implement WAN for nationwide distrib. force, design & dev in-house car wash industry-related s/w, order Entry Syst. Service Parts Catalog & Dynamic Syst Manual using Visual Basic, Access & Visual C++, customize computers by setting up & installing s/w & h/w to meet end-user's needs, conduct internal mfg integration & provide technical support to desktop app incl MS-DOS, MS-Windows, MS-Access, MS-Projects, MS-Excel, & MS-Word. Req: M.S. in Comput Sci/Engr, 10 mos exp in design & dev Windows-based Graphic User Interface using Visual C++ & SQL Server; grad courses Mini & Micro-Comput, Comput Operating Syst., Parallel Proc. H/w, Real-time Lang & Ctrl Syst. 40hrs/wk, 8:30-5:30pm. \$37,375/yr. Employer paid ad. Send resumes to 7316 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No. 129994

**Programmer/Analyst - Performance** of client customized batch & on-line administrative applications programming & systems design in COBOL, CICS, MANTIS computer languages in ROSCOE operating system for implementation on IBM mainframes. Responsible for writing & testing validation programs. Required: 2 yrs. exp. in job offered or willingness to relocate at employer's expense at six months to one yr. intervals to varying client job sites in South & Midwest U.S. \$36,000.00/yr. M-F 40 hrs/wk, 9-5. Apply at the Texas Employment Commission, Dallas, Texas, or send resume to 1117 Trinity, Room 4247, Austin, Texas 78701, JO#7214873. Ad paid by an Equal Opportunity Employer.

**Programmer/Analyst (3 Positions) - Performance of NATURAL I & II/ADABAS and CONSTRUCT financial & administrative programming & software design on IBM & DEC/VAX hardware. Conversion of DEC/VAX NATURAL based financial software to IBM equipment. Req'd: 2 yrs. exp. in job offered & relocation to varying client job sites at employer's expense at six months to one yr. intervals in South Central, Southwest & Midwest U.S. \$34,000.00/yr. M-F 40 hrs/wk, 9-5. Apply at the Texas Employment Commission, Dallas, Texas, or send resume to 1117 Trinity, Room 4247, Austin, Texas 78701, JO#7214873. Ad paid by an Equal Opportunity Employer.**

### Software Tester

Software Tester needed. Capture replay tools experience required. Send resume, salary requirements to

Jackie Fife  
1301 Capital of  
Texas Hwy, C300  
Austin, TX 78746

### Senior Programmer Analyst Denver, CO

We're Provenant Health Partners, one of the largest and most trusted healthcare networks in the Denver area. We now have an exceptional opportunity available for an individual to analyze system problems and develop solutions in our Information Services department.

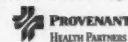
You'll assist personnel in problem areas, define IS specs, and act as lead programmer analyst and/or project leader, coordinating or directing other programmers. Selecting appropriate programming languages, debugging, and testing will all be part of your role.

We require 6 years' programming experience, including 3+ years using MediPac (HealthQuest Patient accounting), a BS in computer science, mathematics, or a related area, is preferred. Candidates must have strong skills in COBOL, CICS, and MVS-JCL. Knowledge of ADS, ClinPac, Patient Management (ADT), and PC skills are desirable. Excellent oral and written communication skills are essential, as are organization skills and the ability to set priorities.

To find out more about the beautiful Rocky Mountain region, and the benefits of working at Provenant, contact: Provenant St. Anthony

North, Attn: Maureen Chiodini,  
(800) 662-JOBS, 2551 West 84th Ave.  
Westminster, CO 80030

Equal opportunity employer.



### VISUAL BASIC

Halbrecht & Company has been retained by a leading international company to identify candidates for a new position in their Houston office.

This candidate will have a structured full-life cycle development background with an emphasis on systems design. Knowledge of Visual Basic is required with C++ a distinct plus.

This person will help design and develop applications as the company re-engineers many of their business processes. This is a highly visible position offering a progressive business and technical environment with excellent career advancement. Resume to Halbrecht & Co., 10195 Main Street, Suite 1, Fairfax, VA 22031. Phone No. (703) 359-2880. Fax No. (703) 359-2933.

**HALBRECHT & Company**

**SYSTEMS ANALYST.** 40 hours per week, \$45,000 per year. Analysis, design, testing and support of parallel algorithms and models on high performance parallel computers for leading edge biotechnical company. Duties include design, simulation, programming and implementation of neural network and other parallel algorithm based mathematical models of physiological processes on shared memory and MIMD based parallel and super computer systems. Work on mapping and visualization software using neural network techniques. Required: M.S. in Electrical Engineering and one year experience or one year experience as systems analyst working on parallel modeling and administration of high performance parallel computers. Apply at Texas Employment Commission, San Antonio, Texas or send resume to the Texas Employment Commission, TEC Building, Austin, Texas 78778, JO# 72714830. Ad paid by an equal opportunity employer.

### COMPUTER PROGRESS UNITED

\$40,000 to \$60,000

We provide Fortune 500 companies with consulting and programming services. We have immediate positions available with a National Client in all regions of the U.S.

### 'C' - APS - Mantis DB2 - Natural PowerBuilder

Send resume or call:  
Computer Progress Unit  
12730 Townpark Way  
Louisville, KY 40243  
(502) 245-6533 • FAX (502) 244-5369

### FLORIDA!!! PERMANENT & CONTRACT

DB2 or IMS P/A's TO \$56K  
AS400 P/A's TO \$52K  
HP 9200 P/A's TO \$58K  
IDMS P/A's TO \$52K  
DBA (IMS or DB2) TO \$64K  
FOCUS or RDB P/A's TO \$54K  
CICS P/A's TO \$48K

For immediate consideration call EDI or FAX your resume to (305) 963-4333.

EDI SYSTEMS  
450 N. Park Rd. #302  
Hollywood, FL 33021  
305-963-9444

Database Administrator to analyze, design & develop solutions for client's unique EDP requirements in business applications; design, develop, code, test & implement ORACLE RDBMS in Client/Server & Unix environment, set up logical and physical data structure parameters in RDBMS applying knowledge of RDBMS theory, design & document logical models using ADV CASE Tools; use computer networking concepts to communicate between mainframes & server; code UNIX shell scripts to manipulate RDBMS at OS level; Req'd: Master's in Comp. Info. Systems or Comp. Sci., 6 mos. exp. in job offered or 6 mos. related exp. as Grad. Assist. Programmer or Sr. Lab Assist. Related exp. must include, in whole or part, technical support for programming, designing & using C & PASCAL, technical support in mainframe-to-micro connectivity & data communications. Must have 1 grad. level course or 3 mos. related exp. each in: MIS & EDP, Software Engg. Management, Data Networks, using ORACLE RDBMS, ORACLE Tools & CASE Tools, developing compiler or interpreter for SQL, using UNIX O.S. & coding UNIX scripts in Korn & C shell. \$45,000/yr, 40 hrs/wk, 8-5p. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #9795 \*Employer Paid Ad

## Information Systems Career Opportunities

The Missouri Employers Mutual Insurance Company, a growing, independent mutual insurance company, currently has a ground floor career opportunity for experienced Information Systems personnel in our Columbia office.

**NETWORK ADMINISTRATOR** - Qualified candidates must possess:

- 3-5 years experience installing and maintaining network hardware and software in Novell Netware environment
- CNE certification preferred

**DATABASE ADMINISTRATOR** - Qualified candidates must possess:

- 3-5 years experience in progressive programming/system analysis and
- 1-3 years experience in developing and maintaining databases in an Oracle relational database software environment.

Missouri Employers Mutual offers a stimulating work environment and the opportunity to be a part of a rapidly-developing organization. For consideration for this position or additional Information Systems positions available in the near future, qualified candidates may submit resumes in confidence to: Human Resources, Missouri Employers Mutual Insurance Co., 200 East Walnut, Columbia, MO 65203.

An Equal Opportunity Employer M/F/D/V



## Consulting Opportunities...

**...GILCO ENTERPRISES, INC. and you!** Headquartered in Chicago, we are a nationwide consulting firm with upcoming projects in the St. Louis metropolitan area. We are looking for Technical Consultants to provide Level 2 and Level 3 support for several mid-range products and applications developed using the mid-range products:

- TCP/IP Development
- Client/Server gateway tools (Sybase, MDI, SQL, Net, etc.)
- DOS/Windows/Windows NT development and operations
- C and SQL Programming
- UNIX Osee and System Administrators
- UNIX, C, C++ skills

Willingness to travel preferred.

Please mail or fax your resume with salary history (principals only, please) to:

### GILCO ENTERPRISES, INC.

Attn: Ms. Judy Evans  
17W220 22nd Street, Suite 110  
Oakbrook Terrace, IL 60181-4477  
Fax: (708) 993-0388  
Equal Opportunity Employer

## SOUTHEAST

Join Computer Consulting Group, one of the Southeast's most dynamic consulting firms, and watch your career soar. We are seeking talented and motivated programmer/analysts and have immediate staff openings through our offices in Richmond, VA, Raleigh and Charlotte, NC, Greenville and Columbia, SC. Our immediate and continuing needs are:

- Network Specialists
- Visual Basic Programmers
- CICS/COBOL
- SAS Programmers
- PC/MAC Specialists
- IMS/COBOL
- Sybase Programmers
- C++/Mail Expert
- Windows NT
- AS400/SP/DB

CCG offers competitive salaries, attractive benefits, relocation assistance and MORE! For immediate consideration send resume or call NOW!

### Computer Consulting Group

Contract Professional Services

One Monckton Boulevard  
Columbia, SC 29206  
1-800-222-1273 • FAX (800) 539-3339  
Member NACCB

## Computer Careers



### The Monster Board™ Jobs On The Internet

More than 500 people a day view these Hot Jobs on our interactive, easy to find Web pages.

- Multi-media Specialists
- Client/Server Developers
- Database Administrators
- Programmer/Analysts
- Senior Product Support Engineers
- Network Administrators

These jobs are just a sampling of opportunities on the board.

### Apply On-Line

Your Source For  
**100's Of Jobs**

Key in:  
<http://www.monster.com>

To post jobs call:  
**(508) 653-7666**



Computer Information Specialist II Design, develop, & manage complex large scale integrated systems involving an intricate state-wide network of synchronized database across State of Missouri; install & administer LANs & provide WAN connectivity; assist in cross-platform data-transfer. Provide end-user training & technical support for the Department's standard applications & operating environments. Perform installation, maintenance, & upgrades. Assist in publishing the Department's monthly environmental report and create graphics, presentations, visual aids, & instructional systems. Minimum Requirements 1. B.S. in Computer Information systems or related degree. 2. One year experience in the development & systems management of microcomputer-based, synchronized, distributed, large scale integrated systems. 1 year programming experience in C. 3. Demonstrated knowledge of Systems development using FoxPro for Windows & Visual Analyst Workbench; design & development of intelligent forms & Windows 3.1 API programming. Graphics systems including desktop publishing, & design & development of automated Database Publishing Systems, presentation graphics interfaces, & instructional systems. The design & administration of wide area networks - including gateways, & multiple protocols & platforms. Installation & administration of PC/LP & TOP/PP networks. 40 hrs/wk. 26,544/yr. Resumes to: John F. Scott, ES Supervisor, Division of Employment Security, P.O. Box 59, Jefferson City MO 65104. Reference Job Order No. 182654. EOE-AA-MF-V-D

PROGRAMMER ANALYST [2 openings] (Ref. 3895) Design & development of Client-Server architecture based applications; study the existing system, write design specifications for client-server environment, design program standards, code, test & implementation; the environment comprises of GUI based client, accessing relational database on Unix platform; the environment comprises of GUI based client, accessing relational database on Unix platform; the environment comprises of GUI based client, accessing relational database on Unix platform. Develop application in GUI X-Window, using C/C++, 4GL, FOCUS, reporting tools SQR, SYBASE associated tools DB-library/ESQL and Operating Systems Solaris, Rpg, Bach in Comp. Sci., Computer Information Systems, Computer, Electronic, Engineering, Systems Analysis or its equiv. & 3 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Systems Executive, Project Leader or Consultant. Will accept 3 yrs. college ed. plus 3 yrs. exp. in job offered or related occup. in lieu of req'd ed. & exp. Must have some related exp. & each of the following: development of Client-Server architecture based applications & using RDBMS SYBASE, 4GL FOCUS, GUI X-WINDOW, C, C++, SQR and Solaris operating system. \$46,000/yr. 40 hrs/wk. 8:30a-5p. Send resume to 7310 Woodward Ave, Rm 415, Detroit, MI 48202 & include Ref # Employer Paid Ad.

Software Engineer, 40hrs/wk., 8am - 5pm, \$46,000/year. Support and upgrade GIS (Guidance Information System) software product, a specialized database system, on various systems and platforms. Graphical User Interface (GUI), database, and TRANSACT programming. Tools: C, UNIX, MS-DOS, MS Windows, PC, Mail, and Sun workstations; MASSCAP Workstation; VAX 4000; HP 2000 M.S. in Computer Science as well as six months experience as a Software Engineer or Graduate Assistant required. Previous experience must include: GUI development, C & TRANSACT programming, C++. Must have proof of legal authority to work permanently in the U.S. Send two copies of resume to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 9 South, Chicago, IL 60605. Attention: James Gregory, Reference #V-L-12346-Z. NO CALLS. An Employer Paid Ad.

Vice President-Software Development. Will direct and coordinate activities of software development department, and act as senior vice president in formulating and administering company policies and developing long-range goals and objectives. Direct and coordinate activities of software development department to attain goals and objectives. Review analyses of activities, costs, operations, and forecast data to determine department progress toward stated goals and objectives. Confer with senior vice president and other executive personnel to review achievements and discuss required changes in goals and objectives resulting from current status and conditions. Confer with subordinates and employer's customers to determine customers' needs, and direct and coordinate the development of software (produced, sold and serviced by employer) to meet customers' needs. Requires B.S. in Engineering (any branch) or Computer Science. Also requires 4 years experience in job or 4 years as Managing Director. Software Development, 40 hours per week, 8 AM - 5 PM \$85,000 per year. Applicants must be authorized to work in the United States. Send resumes to: M. Fowler, Alabama State Employment Service, 3440 Third Avenue South, Birmingham, AL 35222-1712. Job Order AL4224348. E.O.E.

MANAGEMENT ANALYST: Analyzes business procedures and performs system project analysis requirements. Performs the following tasks using RPG language on an AS/400 computer: gathers & organizes information on problems/procedures including current/new operations to Management; prior to project analyzes data gathered, develops information & considers available solutions or alternative functional methods; organizes and creates documents related to changes made and prepare recommendations for implementing new applications; provide technical support on PC applications. Conduct condition testing to ensure functional accuracy. Requires 1) Master's degree in Management or Business Administration; 2) Completion of one graduate course each in Operations Management, Statistical Methods, Managerial Accounting, and Auditing and Management Control; and 3) Any knowledge of RPG language on IBM AS/400 computer. \$40,000/yr. 40 hrs/wk. 9-5. Must have proof of legal authority to work permanently in U.S. Send 2 copies of resume and transcript to: Illinois Department of Employment Security, 401 S. State St., 9 South, Chicago, IL 60605. Attn: Laila Jackson, Ref # V-L-12027-Z. No Calls. An Employer Paid Ad.

### ATTENTION: HIRING MANAGERS

When you compare costs and the people reached, Computerworld is the best newspaper for recruiting qualified computer professionals. Place your advertisement today!

Call toll-free  
**800-343-6474**

ext. 201

(In MA, 508-679-0700)



### COMPUTER PROFESSIONALS OOP, GUI, C/S, DATABASE Connecticut

American Management Systems, Inc. (AMS), a leading computer services firm, is currently seeking talented computer professionals to work in the Connecticut area.

Opportunities are available at all experience levels and require expertise in the following areas:

- Object-Oriented Development (SmallTalk, C++, OO A&D)
- GUI Design and Implementation (Visual Basic, Motif)
- Client/Server Systems (Windows, UNIX)
- Database Development, Administration and Tuning (DB2, Sybase, Oracle)
- IBM mainframe, COBOL/MVS/CICS

For immediate consideration, please send your resume in confidence to: AMERICAN MANAGEMENT SYSTEMS, Dept. CWJK-941204, 12701 Fair Lakes Circle, Fairfax, VA 22033, FAX#: (703) 267-5190. An Equal Opportunity Employer M/F/D/V.



AMERICAN MANAGEMENT SYSTEMS, INC.

### Information Systems Department Manager

#### Frankfurt, Germany

The Army Recreation Machine Program is recruiting for an Information Systems (IS) Department Manager. This civilian position is located in Frankfurt, Germany, and requires strong hands-on management and directional input for future IS development. Successful applicants will have at least 2 years IS management experience and 3 years systems design, programming and project management experience in native RPG400 in an AS/400 environment or with personal computers and networks. Experience with RPG III and IBM S/3X environment, hand-held computers and PC languages such as Clarion, C, Dbase is desirable. Salary range is \$48,000 - \$54,000, plus approximately \$22,000 yearly tax-free housing allowance. Three-year renewable contract, excellent benefits package, relocation paid.

US Army Community & Family Support Center  
ATTN: OFSC-HRP-S-R (Lacy Saunders)  
2461 Eisenhower Avenue, Room 1222  
Alexandria, VA 22331-0923

Resumes and employment and salary history must be received by 6 January 1995.

### Computerworld recruitment advertising works!

That's because more computer professionals read more recruitment advertisements in Computerworld than in any other newspaper.

For more information or to place your ad, call Lisa McGrath at 800-343-6474 (in MA, 508-879-0700).

Weekly. Regional. National.  
And it works.

An IDG Communications Publication

### ANOTHER REASON WHY COMPUTERWORLD RECRUITMENT ADVERTISING WORKS ...

Computerworld gives you only qualified computer professionals.

Unlike the readers of Sunday or daily newspapers, Computerworld's readers are experienced computer professionals. In fact, the majority of Computerworld's audience has experience beyond three years. What's more, some subscribers have been reading Computerworld

ever since its first issue in 1967. Simply put, Computerworld delivers far more than just job candidates -

### Years in Current Job Function Reported by Computerworld's Audience of Over One Half Million

More than 4 years	85%
More than 6 years	71%
More than 9 years	51%
More than 12 years	37%

SOURCE: Skill Survey of Computerworld's Audience, August 1993.

To place your advertisement regionally or nationally, call John Corrigan, Vice President/Recruitment Advertising, extension 201, at 800-343-6474, in MA 508-879-0700.

### COMPUTERWORLD

Where the qualified candidates look. Every week.

## Computer Careers

### Senior Systems Engineer

ISIS Information Systems is Europe's leading developer of IBM Client/Server document solutions. For our US operation based in New Jersey, we look for the following skills for consulting and pre-sales activities.

- IBM/390 VM or MVS experience.
- PC-LAN with Windows and OS/2.
- IBM AFP or office know-how.

ISIS product training would be in Austria. Salary negotiable. Travel in the US required. Please FAX resume to (011)43-2236-21081or via INTERNET atphs9hs@ibmmail.com

### TANDEM PROFESSIONALS

CISCORP, a national systems integration firm and a preferred service provider for Tandem Computers, has requirements as follows:

**COBOL, SCOBOL, C, TAL, SQL, TELCO, CLIENT-SERVER, UNIX**

CISCORP provides excellent benefits to our employees including an Employee Stock Ownership Plan. For confidential consideration, please mail resume to:

Rob Dougherty-MS DMC  
Penn Center West II, Suite 430  
Pittsburgh, PA 15276  
800/969-0099 or fax 412/787-3070

CISCORP

Equal Opportunity Employer

# Information Technology Opportunities

## CHALLENGING ENGAGEMENTS FROM THE BEST COMPANIES

With one call to *RHI Consulting*, you access premium IT job opportunities. Elevate your career by working in leading-edge positions at the most successful, innovative firms. *RHI Consulting* specializes in IT staffing and has developed the contacts necessary to further your career objectives.

And *RHI Consulting* is a division of *Robert Half International Inc.*, the world's first and largest staffing specialist in providing information technology, accounting and financial professionals with more than 175 offices worldwide. Call *RHI Consulting* today!

### TECHNICAL OPENINGS FOR COMPUTER PROFESSIONALS

#### PROGRAMMER/ANALYSTS

- POWERBUILDER/ORACLE or SYBASE
- CA-DATACOM/DB w/IDEAL or COBOL
- DB2/SQL/COBOL
- CICS/COBOL-TELON A PLUS
- LOTUS NOTES
- AS/400/COBOL, RPG or SQL
- X-WINDOWS, MOTIF, PRES, MGR.

#### DATABASE ADMINISTRATORS

- SYBASE
- ORACLE/UNIX or VMS
- CA-DATACOM/DB
- DB2
- INFORMIX
- IMS
- UNIDATA/BASIC/PICK

#### LAN MANAGER

- NOVELL, APPLE TALK, TOKEN RING

#### SYSTEMS SUPPORT

- OS/2 + LAN SERVER/WINDOWS
- VAX SYSTEMS MANAGER
- AIX/UNIX ADMINISTRATORS
- UNIX/SHL/NFS/WORK STATIONS

#### MANAGEMENT CONSULTANTS

- Client/Server Systems Integration
- Financial Package Implementation

Phoenix, AZ ..... (602) 564-6888  
Denver, CO ..... (303) 752-1010  
Houston, TX ..... (713) 764-1700  
San Diego, CA ..... (619) 594-3399  
St. Louis, MO ..... (314) 324-3399  
Tampa, FL ..... (813) 243-3399  
Wash. DC ..... (202) 442-3399  
New York, NY ..... (212) 512-3399

Boston, MA ..... (617) 951-0000  
Dallas, TX ..... (214) 343-3399  
Detroit, MI ..... (313) 524-3399  
Minneapolis, MN ..... (612) 333-3399  
St. Paul, MN ..... (612) 333-3399  
Portland, ME ..... (603) 233-3399  
San Jose, CA ..... (415) 626-3399  
Seattle, WA ..... (206) 157-3399  
New York, NY ..... (212) 512-3399

Dallas, TX ..... (214) 343-3399  
Houston, TX ..... (713) 688-9614  
Phoenix, AZ ..... (602) 564-6888  
**RHI CONSULTING**  
Information Technology Professionals



**United Nations Children's Fund**

The United Nations Children's Fund, with headquarters in New York and offices throughout the world, seeks qualified candidates for the following position:

### DATABASE ADMINISTRATOR (P-4) New York, USA

Has overall responsibility for developing and maintaining logical organizational data and business process models and for providing the methodological framework to ensure these are reflected in physical databases and application systems. Determine, within the overall UNICEF SDLC - Software Development Life Cycle - procedures, the method by which data and business process modelling techniques are applied during Systems Analysis, Design, Development and operation phases. Quality assure the implementation of logical data models in physical databases (including text and other organizational information objects). Develop and maintain organizational business process model.

Minimum Qualifications: Advanced degree in Computer Science or equivalent qualification. Training in Database Management techniques (Logical and physical database modelling, CASE/data and process design, DBMS software operation and maintenance, Data Dictionary operation and maintenance). Good managerial and interpersonal skills. At least five years practical experience at the international level in systems of various types providing a broad overview of an information systems environment similar to that of UNICEF. Fluency in English with working knowledge of French/Spanish desirable.

UNICEF, as part of the United Nations common system, offers competitive international salaries, benefits and allowances.

Please send detailed resume, in English, quoting reference VN-94-273 to: **Recruitment & Placement Section, UNICEF, 3 United Nations Plaza, (SPV - H-5F), New York, NY 10017, USA.**

**Qualified women are encouraged to apply.** Applications for this position must be received by December 26. Acknowledgement will only be sent to short-listed candidates under serious consideration.

UNICEF is a smoke-free environment.



**The Registry, Inc.**, a leading IT consulting firm, is one of a select few organizations to be honored as a three-time Inc. 500 company. We appreciate that our rapid growth and success is attributable to the success of our best-in-class consultants. That's why we offer our consultants unparalleled opportunities, through our:

- **Technology Sector Recruiting**  
*Enables our specialized recruiters to fully understand consultant skills and capabilities.*
- **Delivery Management System**  
*Matches consultant expertise and professional goals with the best local and nationwide opportunities.*
- **Flexible Career Options**  
*Provides hourly and salaried positions both short- and long-term.*
- **Consultant Retention Program**  
*Builds long-term relationships through successive project placements.*



**The Registry, Inc.**

Attn: National Division, 189 Wells Avenue, Suite C, Newton, MA 02159

Atlanta, GA  
Boston, MA  
Charlotte, NC  
Chicago, IL  
Cleveland, OH

Columbus, OH  
Dallas, TX  
Denver, CO  
Durham, NC (RTP)  
Ft. Lauderdale, FL

Greensboro, NC  
McLean, VA  
Newton, MA  
New York, NY  
Rye Brook, NY

Richmond, VA  
Rosemont, IL  
San Francisco, CA  
Seattle, WA  
Schaumburg, IL

## To Advance Your Career, Join Our Winning IT Consulting Firm.

We have opportunities from coast to coast.

Call for a National recruiter, and get on-board projects in the following technologies:

**Informix, UNIFACE, Sybase, Oracle**

ask for Leora Dryer

**IMS DB-DC, DB2, CICS, COBOL II**

ask for Sean Dowling

**Unix Streams, TLIs, SVR4, Windows NT,**

**OS/2 PM, drivers**

ask for Mike Foley

**Vax Systems Managers, Pathworks,**

**ACMS, DECForms**

ask for Sandy Kontos

**Telecomms Switching, AIN, SNMP,**

**CMIP, CMOT, SONET/SDH, X.25**

ask for Mike Foley

**Solaris System Administrators**

ask for Sandy Kontos

In addition to excellent compensation, we provide a 401(k) plan and healthcare options. **Please e-mail, fax or call with your selected opportunity and location:**

**1-800-248-9119 • Fax: 617-527-8805**



## Computer Careers

Computer

### C++/OOP PROFESSIONALS Birmingham, AL

We're constantly preparing our consultants for the future.

At American Management Systems, our I.S. professionals are sharpening their skills on the most advanced computer systems around—learning new applications and techniques every day. That's how we've maintained our position as a leading Information Technology consulting firm. And why top companies from industries around the world depend on us for answers.

We are looking for people with the following skills to join us at our Birmingham facility:

**OO DESIGNERS/PROGRAMMERS:** We are seeking highly skilled technical professionals who are capable of building infrastructure components with client/server experience (C++, ParPlace VisualWorks SmallTalk) and UNIX expertise.

**OO ANALYSTS/DESIGNERS:** Individuals selected will have OO and client/server experience. Telecommunications expertise a plus.

**BILLING SUBJECT MATTER EXPERTS:** We are seeking individuals with the ability to use their knowledge of telephone company billing systems to solve problems associated with the design, development, and/or implementation of telephone company billing systems. Requirements also include exceptional analytical, problem solving, interpersonal, and communications skills. Must be willing to travel.

**APPLICATION PROGRAMMERS:** We are seeking professionals with experience in C++ and SmallTalk.

Additional opportunities are also available for technical professionals with SEI and OO methodology expertise.

Our progressive work environment emphasizes excellence, commitment, and recognition based on performance. Learn more about our competitive salaries, travel opportunities, top benefits, and outstanding career advancement potential. Send your resume, indicating position of interest, to: AMS, Dept. CWPB-941204, 12701 Fair Lakes Circle, Fairfax, VA 22033. An Equal Opportunity Employer M/F/D/V.

**AMS**

AMERICAN MANAGEMENT SYSTEMS, INC.

**Systems Engineer - Duties:** Information systems analysis and software product development and testing on a full service maintenance-tracking software product for IBM compatible personal computers. This product is used in large installations, such as hospitals, food processing plants, pulp and paper mills, utilities, and manufacturing facilities, and includes barcode reading equipment and software to track inventory. Duties will involve the migration of the software product from a DOS environment to a Windows environment, develop object-oriented techniques to utilize fully the capabilities of the new environment. Requirements: M.S. degree in Computer Science or equivalent, plus one year experience as manager of computer software development and sales. Experience and education must include work with machinery, tools and procedure necessary to maintain such facilities as are listed in the duties: 1 year experience with CA Clipper development tools under the Windows Operating System. Salary: \$40,000.00 per year. Hours: 8:00AM to 5:00PM, Monday through Friday, 40 hours per week. Contact: Georgia Department of Labor, Job Order # GA 5798451, 2972 Ash-Kay Drive, Smyrna, Georgia 30082-2388 or the nearest Department of Labor Field Service Office.

**ENGINEER, Software Design,** design & support company's factory automatin. applicatns. involving water fabricatin. processes. Develop. shwr. in a UNIX envrnmnt. using C & C++, & on periphrl. non-UNIX systs. Pricptc. in requirments. definitn. analysis. component. syst. design. coding in C in orgnizatin. style guide, frml. tating. (positive, negative, rgession, & stress), systs. integrin. & tating., full documentatin. to orgnizatin. style guide, pncipatn. in frml. review. installation, end-user training & end-user support. Req: MS in Comp. Sci. + 1 yr. exp. in job offered or in shwr. design. & dev't. Wrk. exp. or grad. studies. mst. incl. dev't of automatin. shwr. incl. marktg. applicatns; syst. dev't. exp. in x86-based microcomprts; exp. withnet. File Syst. incl. demonstratd. knowl. of compr. & networkg. protcols; 1 yr. systs. dev't. exp. in UNIX o/s env.; prgrmmg. exp. in lq. shwr. syst. using C, editrs., browsers, compilers, debuggs. & linkcode-checkrs; prgrmmg. exp. using C++; \$3,660/mo.-40 hrs./wk.; job in: Hillsboro, OR. Qual. applicatns. send w/ resume to: Employment Dept., Attn: J.O. #5550824, 875 Union St., N.E., Rm. 201, Salem, OR 97311. Applicant mst. hv. legl. auth. to perm. wk. in US. Comp. is an Equal Opp. emp. & fly sup- pnts. affirm. action policies.

### SALES/MARKETING PROFESSIONALS

StaffWare Consulting is a leader in the computer consulting and contract programming professional services industry in Houston. Due to growth and expansion plans, we are seeking to add experienced sales and management personnel to our staff. Qualified candidates will have a background in the data processing industry, with professional services experience a major plus.

We offer superior earnings potential, a professional work environment, and a competitive benefits plan. Please send a resume in complete confidence to:

**STAFFWARE**

1111 NORTH LOOP WEST SUITE 800  
HOUSTON, TX 77008  
FAX (713) 880-8938

### CONSULTANTS

\$60,000 TO \$175,000

We have requirements for the following skills:

- IEF (BAA, BSI, Infrastructure)
- Object Oriented (OOA, OOD, OOP)
- ORACLE CASE
- SAP R/2, R/3, ABAP/4
- Methodologists (OO, IE, AI)
- PC Help Desk Support

Please call or send resume to:

LOGAN/BRITTON  
3300 S. Gessner, Suite 203  
Houston, Texas 77063

1-800-362-4352 • Fax (713) 266-0263

## HIRING COBOL EXPERTS?

Advertise in Computerworld's  
December 19th issue  
When Computerworld's  
half-million readers can see a  
feature on "Cobol Careers."

Deadline: December 12, 3pm

1-800-343-6474 x 101

## ANOTHER REASON WHY COMPUTERWORLD RECRUITMENT ADVERTISING WORKS ...

For over two decades, Computerworld has delivered qualified job candidates to America's employers.

And ever since Computerworld's first weekly issue in 1967, America's companies have relied on Computerworld to target America's most qualified computer job candidates.

To place your ad regionally or nationally, call John Corrigan, Vice President/Classified Advertising, at 800/343-6474 (in MA, 508/879-0700).

**COMPUTERWORLD**

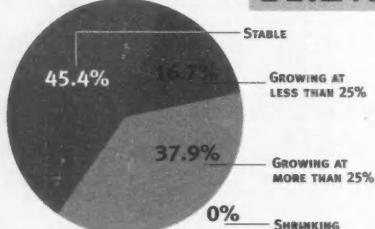
Where the qualified candidates look. Every week.

## CAREER SURVEY: Artificial Intelligence Software

### INDUSTRY HIRING TRENDS

OVERALL GROWTH RATE

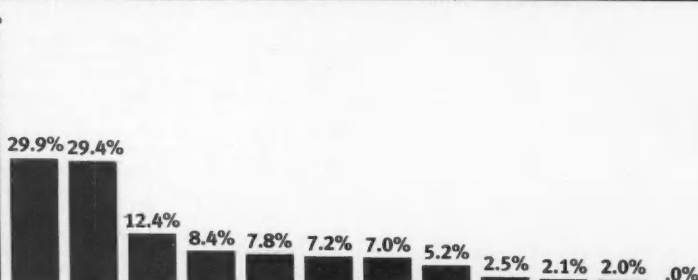
11.2%



SURVEY BASE: 332 TECHNOLOGY FIRMS INVOLVED IN ARTIFICIAL INTELLIGENCE SOFTWARE

SURVEY CONDUCTED BETWEEN DECEMBER 93 AND FEBRUARY 94;

### REGIONAL GROWTH ANALYSIS



**CORPTECH**, A DIRECTORY PUBLISHER IN WOBURN, MASS., TRACKS THE U.S. 35,000 TECHNOLOGY MANUFACTURERS. THIS SURVEY RELATES TO THE 28,437 TRACKED FIRMS WITH FEWER THAN 1,000 EMPLOYEES.

© Copyright 1994, Corporate Technology Information Services, Inc., Woburn, Mass.



## Computer Careers

### DESIGN CONSULTANTS Atlanta

#### Where your input will shape our products.

We are a leading developer of payroll and HR products. Our continuing growth and exceptional customer acceptance has created the opportunity for a number of design professionals to work with our Atlanta design and development team in the development of new Windows-based products used by thousands of customers.

As key contributors to our design and development group, you'll be involved in gathering requests, conducting applications design sessions, defining customer specifications, and implementation of the product construction phase. These positions require design professionals who thrive on robust applications and complex design challenges.

In order to qualify for one of these unique opportunities, you must have a Bachelor's Degree or equivalent and a minimum of 3 years experience with Payroll and/or HR systems such as Tesseract, Integral, Ceridian, SAP or other similar products. Excellent oral, written, communication, and customer interaction skills are essential. Other requirements include familiarity with design tools, function/feature sets, dictionary elements and software quality assurance. Project management experience as well as experience with structured design and development, data and process modeling (Upper CASE) and GUI design are strong pluses. If you have been with an inhouse payroll organization, experience with customization and implementation of S/W packages plus vendor evaluation and selection are desirable.

We offer a competitive salary commensurate with experience and an attractive company paid benefits package. Please mail or FAX your resume in confidence to: **TMP Confidential Reply Service, Dept. DC, 47 Perimeter Center East, Suite 500, Atlanta, GA 30346. FAX: (404) 395-6868.** We are the advertising agency for this company. All replies will be forwarded unopened directly to client. An Equal Opportunity Employer M/F/D/V.



Str. Programmer Analyst for a paper and pulp systems manufacturer in Cincinnati, Ohio/Develop application programs for product tracking in the paper and pulp industry. Modify, test and debug existing programs according to specifications; perform system integration and testing; build graphical user interfaces (GUI) in UNIX and VMS/DCL operating systems independent object oriented programming environment. Extensive travel required to customer sites in the United States, South America, Pacific with 25% - 50% of time spent away from home office. University or research credit in the following computer science areas: UNIX (3 credit hours), Software Engineering (6 credit hours), Database Analysis of Algorithms (6 credit hours), Computer Graphics (3 credit hours) MS or equivalent in Computer Science with no experience required (equivalent includes a foreign equivalency or a Bachelor's degree plus 2 years of experience) 40 hr/wk. 8am - 5pm Mon-Fri./Salary \$2925/mo. / Send resumes in duplicate (no call) to G. Maugans, JOB #00294, Ohio Bureau of Employment Services, PO Box 1616, Columbus OH 43216.

COMPUTER SOFTWARE ENGINEER, mbr of team responsible for arch., design, & development in C & C++, real-time comm. systems, under Windows, 3.1, responsible for developing software systems, & testing, developing, & testing, multi-layered, real-time systems, & porting 3rd-party source code. M.S. Computer Sc. w/5 yrs. after exp. which includes 1 yr. test & 3 yrs. development; work exp. or grad. research must include, or provide: demonstrated ability to port 3rd party software; knowledge of C++, object oriented programming; knowledge of real-time systems; under Windows, ability to port 1st, 2nd, & 3rd party software; knowledge of C++, object oriented programming; knowledge of real-time systems; under Windows, ability to port 1st, 2nd, & 3rd party software; knowledge of C++, object oriented programming; knowledge of real-time systems; under Windows, ability to port 1st, 2nd, & 3rd party software. \$4,441.67/mo.; job in Hillsboro, OR. Qual. applicants send res. to: Employment Dept., Attn: Job Order #5550822, 875 Union St. N.E., Rm 201, Salem, OR 97311. Applicant must have legal authority to permanently work in U.S. The comp. is an Equal Opportunity employer & fully supports affirmative action practices.

TANDEM SOFTWARE ENGINEER required. Design, analysis & development of TANDEM software & source code control. System development using C Programming, Non-Stop SQL/RSMS, PATHWAY system management, Transaction Monitoring Facility (TMF), Distributed Systems Management (DSM) tools, GUARDIAN-90 tools & both Transaction Application Language (TAL) & TANDEM Advanced Control Language (TACL). Build library tools to interface between the applications of the various TANDEM subsystems. Bachelors Degree or its Equivalent required in Computer Intensive Curriculum, plus 2 years experience in the job duties described above. Must have proof of legal authority to work in the U.S. Salary of \$56,000/year for a 40 hour work week. Send resume to: Shirley J. Gregory, Missouri Division of Employment Security, 1411 Main Street, Kansas City, MO 64105. The job order for the job opportunity is 195398. Ad paid by an Equal Opportunity Employer.

SYSTEMS INTEGRATOR/DESIGNER required. Design, develop & implement data collection & Statistical Process Control systems for high-volume assembly manufacturing processes using SPC, SPSS, SIMAN & both quantitative & qualitative statistical analysis & regression testing. Programming in UNIX, C++, SQL, ORACLE & Assembly. Bachelor's Degree required in Manufacturing or Industrial Engineering, plus 2 years experience in the job duties described above. Must have proof of legal authority to work in the U.S. Salary-\$33,000/year for a 40 hour work week. Send 2 copies of resume to Bob Osterlitz, Jobs, Employment & Training Services, 201 E. Washington Avenue, Rm. 211X, Madison, WI 53702. Refer to Case No. 950032. Ad paid by an Equal Opportunity Employer.

### DIRECTOR OF ADMINISTRATIVE INFORMATION SERVICES (AIS)

The University of Minnesota, one of the nation's largest land grant institutions and a Big Ten school, seeks a strong leader for the position Director of AIS. This position is responsible for: Application Development Data Warehouse and Systems Operations. The Director of AIS will assume a lead role in the University's system wide information technology planning process. The goal of the process will be to partner with other University technology providers to re-engineer the technology infrastructure and to migrate to a client/server and imaging technology. To qualify, your background should include: ten plus years U.S. experience, five plus years in a senior management role; strong interpersonal and leadership skills; proven ability to manage successfully a large IBM mainframe environment within a decentralized organization; a track record of implementing a significant technology in a complex environment; involvement with client/server architecture and migration strategy and a baccalaureate degree, graduate degree desired.

The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status, or sexual orientation. Responses should be directed to: **Mr. James Kwapiak/ROBERT HALF INTERNATIONAL, 2800 Norwest Center, Minneapolis, MN 55402**

### 100 Positions... One Location... CTG in Omaha.

Discover CTG in Omaha where new business means more than 100 new positions! A leader in Information Technology, we currently seek talented technical professionals skilled in any of the following:

- COBOL • CICS
- DB2 • VISUAL BASIC
- IMS • LOTUS NOTES
- AS/400 • PACBASE
- UNIX/PERFORMER
- OS/VS/JCL

Join CTG in the heartland and enjoy excellent compensation and benefits, including relocation assistance and P40 OR 401-K. For more information, send your resume to: **CTG Omaha, Attn: R. Knowles, 2027 Dodge St., Ste. 404, Omaha, NE 68182. Ph: (402) 342-8494, Fax: (402) 342-0165. EOE.**



### TANDEM

Immediate openings contract/full time:

COBOL, SCOBOL, PATHWAY SQL, TAL, E and UNIX

Metro Network Inc. 111 Center St., Suite #1310 Little Rock, AR 72201 Tel 501-372-4500 Fax 501-377-2437

### QUALITY IS OUR FOUNDATION... EXCELLENCE IS OUR REPUTATION

**SPECTRUM TECHNOLOGY GROUP, INC.** has been assisting clients with advanced expertise in information technology planning, integration and project implementation since 1979. The foundation for our quality reputation is a group of dedicated people - 13 professionals who take pride in their work, enjoy the diversity of consulting challenges and are eager to contribute to our mutual growth. At Spectrum we've created a corporate culture that encourages the exchange of ideas and promotes internal networking through monthly dinner meetings, in-house classes and a variety of social activities. At Spectrum, you'll have ample opportunity to develop the vision, technical skills and business savvy to meet all of your career objectives.

### INFORMATION ARCHITECTURE CONSULTANTS

Industry trends such as business process re-engineering, data warehouse, and client/server computing are causing increasing demand for Spectrum consultants to serve as Data and Information Technology Architects and Enterprise Modelers.

Spectrum's reputation as a leading source of Information Technology consulting expertise has resulted in immediate project opportunities with clients in the Eastern U.S. We are currently seeking to staff engagements involving Enterprise Modeling, Data Modeling and Data Warehouse Planning and Implementation.

Barbara von Halle, Spectrum Principal, author, and respected Information Management Consultant, is leading Spectrum's initiative in emerging areas including business rule theory and tools, and the effective use of Object Orientation. We are seeking experienced professionals to contribute to our growing reputation, and participate in understanding and applying important industry trends to business opportunities.

Spectrum Data Architects must have excellent analytical and communication skills, and should know relational theory, data modeling and CASE tools. Successful candidates will be full-time employees of Spectrum and will receive full benefits and a competitive salary. Opportunities exist for local New Jersey and remote consulting assignments.

Call (908) 725-4000 today.

You may also fax your resume and salary requirements to (908) 725-9313 or mail them to: Spectrum Technology Group, Inc., Attn: Suzanne Morgan, 3421 U.S. Highway 22, Somerville, NJ 08876. EOE M/F/D/V.



Spectrum People: The Paradigm For Excellence

Welcome to the fast lane. The information superhighway is no place for your career to stall. To keep pace in today's market requires the skills of a company that understands the changing needs of the marketplace - and how to adapt to them.

New Boston Systems is a leading contract consulting company dedicated to furthering your career as a technical consultant. We offer **lucrative long-term contracts** with generous salaries and benefits. We're currently seeking experienced individuals in the following areas:

- MIS (Applications & Systems Design)
  - Pharmaceutical • Insurance • Banking/Financial Services
  - Telecomm • Hospital Info Systems • Business Analysis
  - Mfg/Transportation
- Software
  - UNIX Kernel Network Dev. • HAW Switch Design
  - Client/Server Dev. • Comm/Wireless Design • S/W Arch. Design • GUI/Windows Design • Trainers/NOTES, SAP R3

For assignments in the following areas, and training information, please contact:

New England: Mark Stevens (617) 938-1910 FAX (617) 938-6760

Atlanta: Joe Florenta (404) 551-8130 FAX (404) 551-8130

Raleigh, NC: Debra Reed (802) 616-5991 FAX (919) 676-6566

Boston: Eric Cotts (617) 227-1212 FAX (617) 227-6837

Chicago: Anne Lynne (312) 629-3500 FAX (312) 629-3636

For all other locations, and relocation assignments: National Director: Betty Rogers 1-800-676-9559 FAX (617) 935-7041

Dallas: Cathy Blumert (214) 651-7848 FAX (214) 651-7849

Vienna, VA: Louise Young (703) 917-8800 FAX (703) 917-9088

### NEW BOSTON Systems Inc.

The first to know.

The information superhighway is no place for your career to stall.



### CONSULTANTS SHOULD CONSULT



IMMEDIATE CONTRACTS

Please send resume & call Mimi Simon Assoc. 90 West St., Suite 1105, NYC 10006 (212) 406-1705 FAX (212) 406-1768

# Conference Call



**Computerworld's Corporate Technical Recruiting Conference**  
**Suburban Denver, Colorado**  
**June 11-14, 1995**

**For more information, call**  
**1-800-488-9204**

-----  
Clip and **FAX** this coupon to **1-508-875-3202** or call **1-800-488-9204** for more information.

**Please place my name on your mailing list, so I'll receive registration materials and information throughout the year.**

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

Phone \_\_\_\_\_ Fax \_\_\_\_\_ e-mail \_\_\_\_\_

CIRC

# Marketplace

## RENEGADE PIMs

**Unmanaged personal information managers can spell disaster down the road when users want to share information. Standardize now.**

By Lynn Haber

Personal information managers (PIM) are in vogue if rising sales are any indication. But fashion doesn't always beget function, particularly when it results in PIM users breaking ranks with corporate standards.

While there is no way of knowing how many backdoor PIM users exist in any given organization, it's likely that of the 80% of consumers who independently buy PIMs, a fair number load them onto their PCs at work. Information systems staffs might choose not to take notice of them now, but down the road PIMs can become a royal headache.

"IS must be aware that at some point users will want to exchange PIM-related information, like directories or sales, with other users and have access to legacy data," says Karl Wong, principal analyst for PC and workgroup software at Dataquest, Inc. in San Jose, Calif.

Organizations may not be able to stop individuals from buying PIMs, but proactive measures can ward off chaos. For example, standardizing on an office automation suite that includes PIM functionality would, by default, mean standardizing on a PIM. Another method is to allow departments to buy and manage their own PIMs.

Managers at the Environmental Protection Agency in Washington never cared what software individual users loaded onto their machines, says Gerald

LaVeck, program manager at the EPA's Clean Water Act office and one of several renegade PIM users in his group. However, as the EPA migrates some 55 offices and 9,500 people to a LAN environment, word from management is that renegade software is out.

### Forced to choose

For LaVeck and some 20 other ad hoc PIM users, standardization means PerfectOffice from WordPerfect, the Novell, Inc. Applications Group. "The organization was particularly interested in finding a program for E-mail and group scheduling," he says. Eventually, the onus will be on renegade PIM users to peacefully stop using their PIM software or deal with using two systems, only one of which will be supported.

Although LaVeck is adamant about

continuing to use his chosen PIM—Lotus Development Corp.'s Organizer 1.1—he admits the peer pressure to conform will be enormous. "What happens when I don't show up for a meeting and someone says they sent me an E-mail message and it was posted on the scheduler?" he asks.

At the organizational level, Wong estimates corporations purchase 20% of PIM products. "Companies that buy these products look at them primarily as group schedulers, not as PIMs," he says. Moreover, the boundaries between PIMs, contact managers and even sales automation software are blurring.

"We're seeing vendors of basic PIM products add more features like contact management and vendors of high-end sales automation software make their products easier to use and less expensive," Wong says.

When PIMs are brought into an organization for group scheduling and coordination, management is most likely involved with the purchase of the product as well as its maintenance and support.

Yvonne Walker, add-on sales manager at Sakris Systems, a systems integrator in Birmingham, Ala., says a lot of planning went into the selection of the PIM that would synchronize the work of her organization's 17 field salespeople and in-house telemarketers.

"We needed a product that would allow our salespeople and telemarketers to share customer contact and sales data-

base information," Walker says. Goldmine for Windows, from Elan Software Corp. in Pacific Palisades, Calif., allows Sakris Systems' employees to track referrals, appointments and callbacks and to forecast sales.

Standardizing on a PIM was impor-

tant. "It allows us to have uniform data, pull information for analysis and reporting and keep track of all potential and existing sales," Walker says.

Likewise, Shawn Fielder, project coordinator at National Em-

bossing Co. in Stafford, Texas, was recently charged with finding a PIM that would facilitate smoother operations. Standardization, he says, is critical. "Our main objective is for information sharing between sales and programmers and production and to schedule meetings," he says.

While standardizing on a PIM is a given for Fielder, meeting everyone's needs with a single product isn't easy. "Each group of users has different needs or demands on functionality, however, there must be compromise," he says.

Managers who have already standardized say that no single PIM product will do everything you want. If the PIM provides 90% of the functionality you're looking for, buy it. The benefits of standardization outweigh any compromise. ■

Haber is a free-lance writer in Jamaica Plain, Mass.

### Pining for PIMs

**PIM market revenue (U.S.)**  
(in millions)

1993	\$64.4
1994	\$77.3
1995	\$91.2
1996	\$95.8

Source: Dataquest, Inc., San Jose, Calif.

### Network Management Tools

#### FILEAUDITOR® TELLS ALL!

#### WHO GOT INTO WHAT FILES, WHEN?

FileAuditor enhances your network security by...

- ▲ Tracking file and directory activity on the network.
- ▲ Having proactive network security with NLMauto or NLMerlin
- ▲ Denying access to specific files.
- ▲ Generating custom reports.

**If you need enhanced network security**

Call: **1-800-333-8698**

FAX: (602) 545-0008  
Knzall Systems, 375 E. Elliot Rd., #10 Chandler, AZ 85225  
A Division of Tangram Enterprise Solutions



### Networking Management

#### WHEN A WARM BOOT DOESN'T WORK... THERE'S ALWAYS THE IPS-110

- Remote power cycle 1 to 1,024 devices from single line
- User ID/Password Security, with device database
- User programmable power sequencing
- Dial-Back: individual power loss, temp, UPS on battery
- VT100 Emulation, 2400 Baud built in modem
- Internal battery backup
- Current verification on each device
- 30 Day Money Back Guarantee, One Year Warranty

FOR A PERSONALLY GUIDED DEMO CALL:  
**1-800-776-4346**

**LodeStar Technologies Inc.**

COMPUTERWORLD DECEMBER 12, 1994 109

## New Products - Hardware

### Mainframe Connectivity

**How to connect**

**FREE!**

**NEW Bx3270 DEMO DISK**

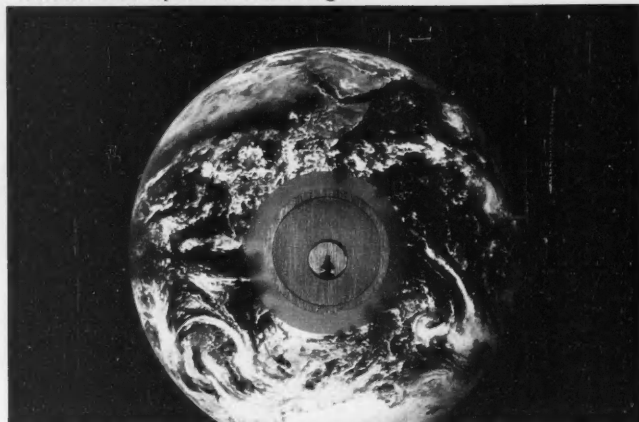
**3270 SNA Emulation Software for Windows™**

Access IBM mainframe applications from your PC.

- 3270 and Telnet 3270 clients for Windows 3.1
- File transfer and print
- Point & click programming
- 100% Winsock-compliant
- Graphical keyboard mapper
- Allows interactive query of applications like TSO, CICS, IMS, and NetView

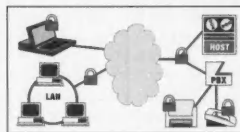
**CALL 1-800-BRISTON**  
Brixton Systems, Inc.

### Network Security & Wireless Bridges



## Cylink has the world locked up.

You can secure your information globally. You just need the right security partner. Only Cylink has spent the last ten years building a support organization in over 80 countries—working successfully with local governments, customs, and communications infrastructures. We can secure everything from applications on a laptop to global wide-area networks, from telephones to high-speed data links. We secure information for most of the world's money center banks, Fortune 500 companies, and government, police, and military organizations. Because of our experience, it's easier than you think to keep your information safe. Cylink Corporation, 910 Hermosa Court, Sunnyvale, California, USA, 94086. Telephone: 408-735-5800, FAX: 408-720-8294, Toll-free (USA): 800-533-3958. Worldwide sales & support.



England: Cylink, Ltd., Hampshire—TEL: +44-256-941919 • FAX: +44-256-24156  
Singapore: Cylink Corporation—TEL: +65-336-8077 • FAX: +65-336-1429  
© 1994 Cylink Corporation. Cylink is a registered trademark of Cylink Corporation.

**CYLINK**

### Object-Oriented Development

**This ain't no  
bit-tweaking,  
candy-assed  
OO tool.**



**Introducing ObjectPro.** The only OO tool that lets you develop high-performance, visual applications without low-level programming.

**Supreme productivity.** ObjectPro gives you the same flexibility, tools and power of C++ and Smalltalk *plus* powerful editors, browsers and debuggers. Just point, click and move on.

**Ultimate object reuse.** ObjectPro lets you assemble applications from custom class libraries, industry-standard controls, third-party solutions, or your own components to spin applications in record-breaking time.



Call 1-800-234-7724 today for a FREE ObjectPro 30-day evaluation.

Trinzic Corporation, 101 University Avenue, Palo Alto, CA 94301. Voice: 415-328-9595, Fax: 415-321-7728, E-mail: objpro@trinzic.com  
ObjectPro is a trademark of Trinzic Corporation. All other trademarks are the property of their respective companies.

CW12/92

### Security

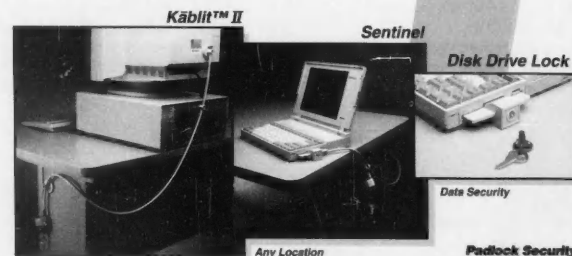
**Käblit™ Security**

**NOW!**

## STOP COMPUTER THEFT IN THE OFFICE — ON THE ROAD

- Secure computer or notebook to desk, table, etc.
- Lock disk drive — Protect data
- Lifetime warranty

**\$24.95 to  
\$49.95  
Retail Price**



**Quick and Easy to Install!  
Compact — Lightweight!  
Available For Macintosh Computers Too!**

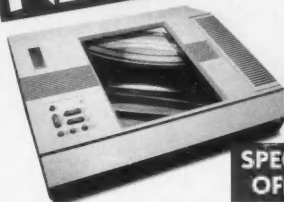
**Order Now — Call 800-451-7592**

**Secure-It**

18 Maple Court, East Longmeadow, MA 01028

The particular Master Lock Trademarks used are trademarks of the Master Lock Company and are used by Secure-It, Inc. under license.



**NEW!****SPECIAL OFFER**

**Affordable color!** Our most popular product just got even better. Better wall-sized true-color projection at the same unbeatable price. The BOXLIGHT ColorShow 1200 is our best seller for a good reason - value!

**BOXLIGHT 1200. \$2,299**

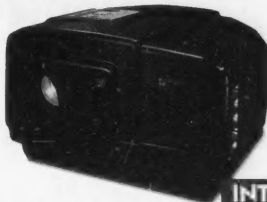
- ◆ 24,389 vibrant colors
- ◆ Universal PC and Mac compatibility
- ◆ Compact, portable design
- ◆ FREE remote control and cables
- ◆ Brightest color at any price
- ◆ Now with faster mouse response!

**BOXLIGHT: Your direct source for all the bright answers.**

- ◆ More than 50 models in stock
- ◆ Instant availability
- ◆ Overnight shipping
- ◆ 30-day guarantee and extended warranties
- ◆ Expert technical support

**Three for the show.****BOXLIGHT 2100. \$6,299**

**All-in-one!** Convenience is the key with the new BOXLIGHT ProColor 2100 integrated LCD projector. Outstanding brightness without the need for an overhead projector. Built-in video AND audio for true multimedia. Automatic dual-lamp changer means the show always goes on. A high-performance solution at a tremendous introductory price.

**INTRO... PRICE**

- ◆ 16.8 Million colors!
- ◆ Built-in video convertor
- ◆ Built-in audio amp & speaker
- ◆ Optional wide-angle lens
- ◆ FREE Remote control & cables

**MULTIMEDIA READY**

**Price Performance!** Over 600,000 colors and built-in audio make your presentations and meetings come alive with wall-sized video and room-filling sound. Super-fast response times, VESA Local bus video compatible. Need we say more?

**BOXLIGHT 1500. \$3,799**

- ◆ 16 million colors, 600K simultaneously
- ◆ Built-in audio amp & speaker
- ◆ Rugged, lightweight metal case
- ◆ Projects from PC, Mac or VCR
- ◆ Model 1300 without video/audio - \$2,999!

An  
**Inc. 500**  
Company

No one else offers the one-stop shopping...the selection... the value...the immediate delivery... and the knowledgeable service and support you get from the projection panel experts.

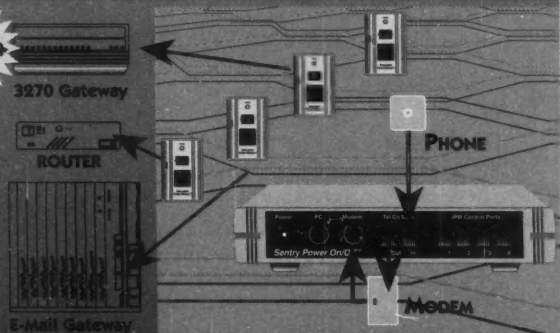
The Inc. 500 logo is a registered trademark of Goldfarb Group, Inc.

**BOXLIGHT CORPORATION**

17771 Pyral Dr. N.E., Poulsbo, WA 98370 • 206/778-7301  
Payments: VISA, MasterCard, American Express, COD and  
Purchase Orders (some restrictions). Leasing and rental  
options available. 30-Day Money-Back Guarantee.

**Call today 1-800-762-5757**

## Networking Management

**LOCKED-UP ROUTERS & OTHER WAN DEVICES  
USING THE SENTRY REMOTE POWER MANAGER**
**FREE TRIAL OFFER****Re-Boot**

Using an ANSI emulator, a network administrator, calls the sentry, enters a password and receives an on-screen menu. From the menu individual ports can be toggled "power-off" or "power-on" to re-boot locked-up mission critical network devices. The Sentry supports 4 companion power modules which control the AC power flow to each network device.

When your remote Router, Modem, Gateway or Access Server gets locked-up RE-BOOT IT using the Sentry Remote Power Manager.

Sentry provides network remote power on/off REBOOT control to any networked network devices.

Call for info or a  
Free Demo Disk

800-735-1515 U.S.

Source Technology  
1885 Hamletwood Ave  
San Jose, CA 95128  
408/251-0200  
Fax 408/251-0200

## Buy / Sell / Lease

**BUY • SELL • LEASE • RENT****IBM Systems • Peripherals • Parts & Service****SPECIALIZING IN:**

- ▷ RISC System/6000®
- Workstations
- Parts & Features
- AS/400®
- Novell Networking
- Sun & Dec
- Personal Computers
- Data Communications
- UPS Systems
- Peripherals & Upgrades
- System 36 Conversions
- AutoCad

**NEW & USED IN STOCK**

Complete Technical Center,  
Installation, Stock Parts &  
Features for RISC.

**Authorized Distributors  
for: Seagate • Xerox  
Kingston • Cal Comp  
Motorola • UDS/Codex  
Decision Data Products**

**8 Nationwide Locations**

A Publicly Traded Company  
NASDAQ: MKPL

*'Computer Marketplace  
prides itself on being  
your one-call computer  
hardware solution.'*

**COMPUTER  
MARKETPLACE**

TEL (909) 735-2102 • FAX (909) 735-5717  
1490 Railroad Street • Corona, CA 91720

**800-858-1144**

ascd IBM Trademark  
CDLA CBE

MARKETPLACE

## TCP/IP Applications For Windows.

### Network Your PC To The World With Chameleon.

#### BEST VALUE

Chameleon offers more applications than any other product. Providing a comprehensive Windows solution for TCP/IP networking.

#### SEVEN INTEGRATED SUITES

Terminal emulation, e-mail, file and printer sharing, remote access network utilities, administration tools and point-and-click interface into the Internet.

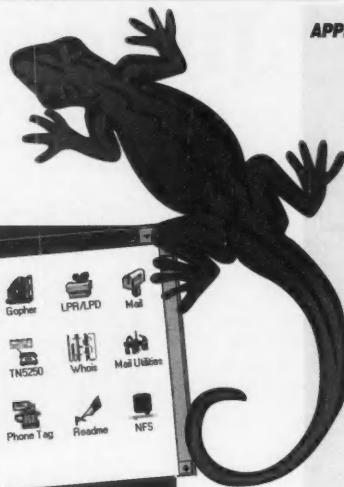
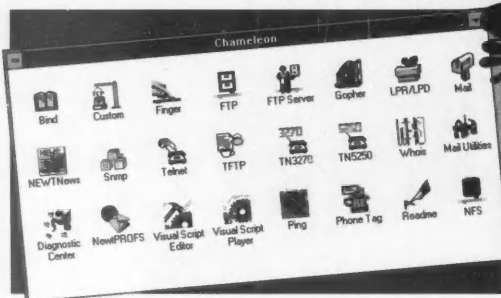
#### SEAMLESS ACCESS TO OTHER

**HOST SYSTEMS** More applications allow you to access information on Unix networks, mainframes, minicomputers, PC-based LANs and WANs, and the Internet.

#### HOME, OFFICE AND REMOTE INTERNET ACCESS

Chameleon's easy-to-use Windows interface accesses Internet resources anytime, anywhere.

Chameleon includes WinSock TCP/IP and is 100% DLL. It requires only 6KB memory and 5 minutes to install.



#### APPLICATIONS INCLUDED:

Terminal Emulation  
Telnet: VT100, VT200, TVI, TN3270, TN5250, Visual Script Editor and Player  
File Transfer and Printer Sharing  
FTP Client and Server  
TFTP  
LPR/LPD  
NFS  
Electronic Mail  
SMTP Mail with Mime  
Phone Tag  
Windows interface to IBM PROFS mail  
Internet Access  
Gopher  
Newsreader  
Whois  
Network Utilities  
Ping  
Finger  
DNS Client and Server  
Networking Tools  
TCP/IP Stack  
Diagnostic Center/Trace  
Agent  
Custom



© 1994 NetManage Inc., 10725 North De Anza Boulevard, Cupertino California 95014, U.S.A.  
Fax: (408) 257-6465. Specifications are subject to change without notice.

**NETMANAGE™**

(408) 973-7171

e-mail: sales@netmanage.com

World Wide Web: www.netmanage.com

Buy / Sell / Lease

## Dempsey: Where IBM® Quality is Second Nature!

- AS/400
- INDUSTRIAL PC
- RS/6000
- SYSTEM/36
- SERIES/1
- 9370
- ES/9000
- PS/2 & VP

#### Sales & Rentals

- Processors
- Peripherals
- Upgrades

For pretested equipment, flexible financing, configuration planning, technical support and overnight shipping call.

**Dempsey**  
**BUSINESS SYSTEMS**

18377 Beach Blvd., Suite 323 • Huntington Beach, CA 92648  
(714) 847-8486 • FAX: (714) 847-3149

**IBM**  
Authorized  
Distributor  
Integrator

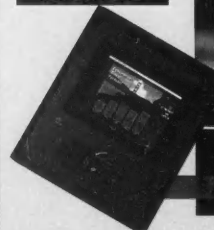
(800) 888-2000

IBM is a registered trademark of International Business Machines Corporation.

Computer Presentation

## Power Tools for the Power Presenter

One stop shop for all major brands



COLOR from \$1,795

For the latest in color projection panels and projectors call the experts in LCD technology. Your satisfaction guaranteed or your money back. Quick delivery via Fed-X or UPS.

Call for CATALOG 1 800 726 3599

**Panelight**  
DISPLAY SYSTEMS, INC.

101 The Embarcadero Ste. 100-A, San Francisco, CA 94105  
Hours: 6:30 to 5:30 PST, 9:30 to 8:30 EST  
VOICE: 415 772 5800 FAX: 415 986 3817

# Buy / Sell / Lease - Novell "Yes"

## Large Systems Computers & Peripherals



• ES/9000  
• SERIES/1  
• AS/400  
• RS/6000  
• SYSTEM/68  
• Point Of Sale  
...and more!

New & Used

• **Computers**  
• **Peripherals**  
• **Upgrades**

Buy • Sell • Rent • Lease



**SPECTRA**  
(800) 745-1233  
(714) 970-7000 • (714) 970-7095 Fax

Anaheim Corporate Center  
5101 E. La Palma Ave., Second Floor  
Anaheim, CA 92807

amciah  
Cisco  
Concurrent  
Data General  
digital  
Hitachi  
HEWLETT  
PACKARD  
Memorex-  
Telex  
Prime  
Silicon  
Graphics  
Stratus  
Sun  
TANDEM  
TEXAS  
INSTRUMENTS  
UNISYS  
XEROX

## Computer Products

### Holiday Specials

- Apple Performa 450 68030/33MHz/5.160/CD-ROM/ 29" Color Mon. \$1075
- Mac Performa 466 68040/33MHz/4.160/ 29" color. Mon. \$875
- Mac Performa 475 68040/25MHz/4.160/ No Monitor \$785
- Mac Performa 550 68030/33MHz/5.160/ CD-ROM/ built in Color. Mon. \$1075

*All Apple systems are factory refurbished and include a 90 day parts & labor. Apple warranty, standard keyboard, all cables, manuals & software.*

- Apple Compatible Printers
- Okidata OL410E/PS.600x600/4ppm/2MB/Apple Talk/RS-232-C/Parallel/PC/L-5/Postscript Level 2 Emul./HPLJ3/Apple Laserwriter (New w/a manufacturer's warranty) \$725
- Notebooks/Portables
- AST Power Exec 386S/ 25MHz/ 2MB/ 80 MBHD \$675
- AST Power Exec 386S/ 25MHz/ 4MB/ 120 MBHD \$795
- AST Advantage Express 486SX/25 Model 1734/10MB/CD-ROM/DOSWin 3.1/Fax/Modem (P/N 501262-003) \$925
- Compaq SLT 386S/ 20MHz/ 2MB/ 60 MBHD \$595
- Compaq SLT 386S/ 20MHz/ 2MB/ 120 MBHD \$695
- Compaq Conture 486S/25/4/120/1 44 FDD/9600/2400 Fax/Data Modem Trackball VGA Mono/DOS 6.0/Win 3.1/PFS Windows/Works NCR 3150 486SX/25/4/120/Active Color (New) \$930
- AST Desktops
- Advantage Adventure 486SX/1MB Local Bus/Video/16 bit sound blaster card/MM dual speed CD-ROM/dual speakers/microphones/SVGA color/DOS 6.21 (P/N 501276-002) \$895
- 25 Model 1734/170 \$195
- 33 M Model 1734/170 \$1045
- 33/4/210
- Advantage Pro 486DX/250 Model 348/4/340/1MB Local Bus/Video/SVGA color Dual FDD Fax/Modem (P/N 501416-001) \$1095
- Compaq Desktops
- Prolinea CD, 486SX/25/4/118/CD ROM/Speakers/Microphone Fax/Data Modem/1.44 FDD/Color 28.5VGA/SW \$890
- Prolinea 4255 486SX/25/4/121/28.1 44 FDD/SVGA color/9600/2400 Fax/Data Modem/Mouse DOS 6.0/Win 3.1/America Online/Quicken/Tab Works/PFS Windows/Works/Prodigy Presario 850 486SX/25/4/263/1 28.1 44/9600/2400 Fax/Data Modem/SVGA color DOS 6.0/Win 3.1/MS Works/WinFax Lite/Tabworks/MS Publisher \$1150
- Monitors
- 20" Radius for Mac \$995
- 20" Super Match for Mac \$995
- 18" Bull ES SVGA \$195



TEL: 315-438-4400  
FAX: 315-438-4213

NATIONAL COMMODITY CLEARANCE CENTER, INC. 440 Joy Rd., E. Syracuse, NY 13207

Equipment carries a 90 day back-to-repair warranty. Call us complete inventory list. Equipment is subject to prior sale, pricing may change without notice. This ad contains certain technical inaccuracies or typographical errors. FCB Syracuse, NY. CDO Staff or Inspec. Authorized returns of products for refund are subject to a 20% restocking charge and are limited to 15 days from invoice date.

## Buy / Sell / Lease

### When Stellar Performance Counts

Since 1980, Star has offered immediate availability on new and refurbished IBM equipment at prices that aren't out of this world. Call us and we will show you why we are ...

*"The Brightest Star in the Midrange Industry"*

★ AS/400 Systems	★ System/36 Features	★ New IBM Terminals
★ AS/400 Features	★ IBM DASD	★ New IBM Controllers
★ RS/6000 Systems	★ IBM Tape	★ New IBM Modems
★ RS/6000 Features	★ IBM Lexmark Printers	★ New UDS & Codex Modems
★ System/36 Systems	★ IBM Pennant Printers	

1-800-548-5421 EXT 730



**STAR DATA SYSTEMS**  
888 Isom Road • San Antonio, TX 78216  
TEL: (210) 341-8114 FAX: (210) 341-9754

Used Equipment & Deinstallation

**Buy, Sell, Deinstall**

- Purchase of used mainframe systems and peripherals
- Deinstallation Services

Wanted to Buy

• 308x	• 3420
• 3370	• 3422
• 3380	• 3480
43xx	53xx

914-427-2151 Fax: 914-427-7791



Electronic Resource Recovery  
PO Box R • Henry Henning Dr.  
Maybrook, NY 12543-0316  
Contact: Bob Hewitt

### Novell YES Partners

It runs with NetWare

#### Network Diagram Tool

Diagram, document networks & systems with **netViz**



*"Powerful yet easy to use" -PC Week*

- Intuitive drag-&-drop interface saves loads of time
- Embed descriptive data within graphic objects
- Multi-level capability handles complex structures

**Free demo version of netViz!**

- CompuServe: GO WRAPD; download the NVDemo.EXE.
- Internet: Send message to [netware@nw.com](mailto:netware@nw.com) (no subject needed); message contains "get netViz demo". File will be sent to you.
- After download: At DOS prompt, type "netViz". From Windows, run "setup".

\$395. 30-day money back guarantee.

1-800-827-1856 Quyen Systems, Inc.

#### Virus / Security Protection



**ALL STOP VIRUSES**

Violating This Law Could Cost You More Than 2 Points and \$49.00

It Could Cost You Your Job!

**EMD Armor™**

PC and Network Protection. Stops Boot Viruses. Hard Disk Protected from Virus Formatting. Continuous Virus Activity Monitor. Correct Power Up insured by CMOS Protection. Virus Protection During File Copying/Executing. Password Protection. Prevents Changing Or Using Private Files. Conventional Memory Not Used!

Ask About Our Corporate "Try Before You Buy Policy"

**EMD Enterprises (410) 583-1575 ext 3020**  
Fax Back - extension 4, document #1015

### Looking To Buy NetWare Products and Services?

If the Answer is "Yes," Look No Further.

**Novell YES Partner's Directory in Computerworld Marketplace**

What's the Best-read Newsweekly among IS Professionals?

**Simmons Says...**

**Computerworld. Again!**

Call for Complete Details!

**Computerworld Marketplace**

Call 1-800-343-6474, ext 744

Used Equipment & Deinstallation

**Buy, Sell, Deinstall**

- Purchase of used mainframe systems and peripherals
- Deinstallation Services

Wanted to Buy

• 308x	• 3420
• 3370	• 3422
• 3380	• 3480
43xx	53xx

914-427-2151 Fax: 914-427-7791



Electronic Resource Recovery  
PO Box R • Henry Henning Dr.  
Maybrook, NY 12543-0316  
Contact: Bob Hewitt



## Services - Classified

### Outsourcing / Remote Computing

**X** Your best choice for mainframe computing services.

**REMOTE COMPUTING**

**Extensive Software Library**

Telenet	Tymnet	MVS/ESA	IMS/DBDC
Advantis	Compuserve	VM/ESA	CICS SAS
		VSE/ESA	TSO DB2

Extraordinary Customer Service  
Migration Management

**FANEUIL SYSTEMS**

708-574-3636  
New England 617-595-8000  
815 Commerce Drive, Oak Brook, IL 60521

### Outsourcing / Remote Computing

**ALICOMP, INC.**

The "Boutique" of the Computer Services World

**Outsourcing Remote Computing**

VM, MVS, VSE

**Two State of the Art Locations:**

**ALICOMP / CBS**

20,000 sq. ft. Manhattan complex 105,000 sq. ft. Secaucus, NJ complex

**"Our Platform is Excellence"**

Serving Clients Since 1980

(212) 886-3600 • (800) 274-5556

### Outsourcing

## If Outsourcing is your objective...

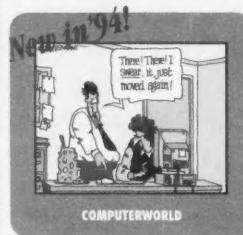
You can maximize your information technology investment by outsourcing part — or all — of your IS operation. Whether it's a transitional or long-term total services partnership, American Software's the right place to rightsize.

Even software developers enjoy the cost and time-saving benefits of outsourcing with us. Call today and we'll tell you why.



### The Outsourcing Group

A Unit of American Software USA  
470 E. Paces Ferry Road  
Atlanta, GA 30305  
404-264-5770



## COMPUTERWORLD's

### "5th Wave" Cartoon Mouse Pad

**COMPUTERWORLD** brings humor to a mouse pad featuring a new cartoon from "The 5th Wave" series by Rich Tennant. Not available in stores, this colorful foam-backed pad will keep your mouse clean and protect your desktop.

Best of all, it's only \$7.99\*. Send your name, address and check or money order to **COMPUTERWORLD**, P.O. Box 9171, Framingham, MA 01701, Attn: Product Fulfillment. For credit card orders, call 1-800-343-6474.

\*In U.S., for each unit ordered, add \$1.25 for postage and handling; orders outside U.S. add \$2.50 each. Residents of MA, CA, GA, NJ, and DC add applicable sales tax. Canada residents add G.S.T.

### Bid / Proposals

**CITY OF NEW YORK**

**REQUEST FOR INFORMATION FOR BULLETIN BOARD SYSTEM**

The New York City Mayor's Office of Contracts (MOC) invites qualified firms to respond to a Request For Information (RFI) or the development of a Procurement Bulletin Board System. The RFI seeks information relevant to the development of a Procurement Bulletin Board System or the use of a Commercial On-Line Service that would act as the City of New York Procurement Bulletin Board System.

To receive a copy of the RFI interested firms should contact Barbara Kearse, Project Director, Management Engineering, Mayor's Office of Contracts by telephone at (212) 788-0088, or by FAX at (212) 788-0049. Submissions are due no later than December 30, 1994 at 5:00 P.M., hand delivered or addressed to:

Barbara Kearse  
Project Director  
Management Engineering  
Mayor's Office of Contracts  
17 John Street, 11th Floor  
New York, New York 10038

 **The City of New York**

### Bid / Proposals

**REQUEST FOR PROPOSALS FOR A JAIL HOSPITAL INFORMATION SYSTEM**

THE LOS ANGELES COUNTY SHERIFF'S DEPARTMENT, MEDICAL SERVICES IS ISSUING A "REQUEST FOR PROPOSALS" (RFP) TO QUALIFIED VENDORS TO PERFORM A STRATEGY AND ANALYSIS STUDY, AND SUBSEQUENTLY DESIGN OR INTEGRATE AND IMPLEMENT A JAIL HOSPITAL INFORMATION SYSTEM. THE "SYSTEM" WILL BE UTILIZED AT THE VARIOUS JAIL FACILITIES WHERE THE LOS ANGELES COUNTY SHERIFF'S, MEDICAL SERVICES PROVIDES INPATIENT AND/OR OUTPATIENT SERVICES.

ALL INTERESTED VENDORS ARE ASKED TO SUBMIT A LETTER OF INTENT TO PARTICIPATE IN THE RFP VENDOR SELECTION PROCESS TO:

LOS ANGELES COUNTY SHERIFF'S DEPARTMENT  
MEDICAL SERVICES  
441 BAUCHET STREET ROOM 6076  
LOS ANGELES, CALIFORNIA 90012  
ATTENTION: RON DOWELL

TO RECEIVE A COPY OF THE RFP, YOUR LETTER MUST BE RECEIVED, "REGARDLESS OF POSTMARK" AT THE AFOREMENTIONED ADDRESS ON OR BEFORE THE 21ST DAY OF THE MONTH OF DECEMBER, 1994. THE RFP WILL BE AVAILABLE ONLY TO THOSE VENDORS THAT RESPOND TO THIS NOTICE WITHIN THE SPECIFIED TIME PERIOD.

FOR QUESTIONS AND FURTHER INFORMATION ONLY, PLEASE CALL (213) 974-9991.

### Winner of the Industry's Most Prestigious Awards based on Editorial Content and Quality...Again.

- ★ Best Computer Industry Newspaper 1994 Computer Press Awards
- ★ Best Computer Industry Newspaper 1993 Computer Press Awards
- ★ Publication of the Year 1992 Magazine Week Editorial Excellence Award

**For Over 26 Years, the Leader in the IS Market and the Flagship Publication of IDG Publishing!**

**The Business Charter.** Positioning itself as "Your Best Choice for Mainframe Computer Services," Faneuil Systems has been providing outsourcing and remote computing services to a growing base of customers throughout the U.S. for over a decade.

**The Results...Bottom Line.** "In our business, the quality of leads is what we focus on most. And we experience a higher rate of closure with leads generated by Computerworld Marketplace than with leads from any other source. Because we consistently get very qualified prospects, we advertise in Computerworld Marketplace exclusively. Until I'm convinced that we can get better results elsewhere, Faneuil Systems will continue running weekly advertisements in the primary classified resource for IS — Computerworld Marketplace."

Luis Navarro, Vice President of Sales  
Faneuil System Chicago IL

**COMPUTERWORLD Marketplace**



## Looking for...

...Application development tools from an experienced developer?

The AD Toolbox has just what you're looking for ...flexible, portable, and maintainable tools for your environment/platform. Simply locate the developers providing your solutions - and give them a call.

And, if you're a developer with solutions to sell,

call 800/343-6474, ext 744

Then watch the AD Toolbox go to work - for you!

# APPLICATION DEVELOPER'S TOOLBOX

## PRINT STREAM MGMT

### Enhance the Productivity of Your Legacy Applications

Introducing StreamWeaver™... the latest in print stream management technology.

With StreamWeaver, you can change your output without changing your applications. The benefits are clear:

- Combine output from multiple business applications without costly programming changes
- Increase the productivity of your legacy applications
- Extend the life of your mainframe
- Works with all IBM and IBM-compatible mainframe applications

Reduce costs. Increase efficiency. Call  
**(800) 624-8377**



StreamWeaver is a product of PDR Automated Systems and Publications, Inc.

## PARALLEL PROCESSING

### AWAKEN THE GIANT

#### BLACKBIRD

- Save Millions On Main Frame Time
- Increase The Worth Of Your Networked PCs
- Utilize What You Know To Minimize Training
- Speed Up Compute Intensive Applications
- Off Load Data Intensive Applications
- Runs On PCs With Microsoft Windows, NT
- Link In UNIX Workstations
- Provides A Blackboard Architecture
- Supports Parallel Processing Primitives
- APIs In C

#### NORRAD, Inc.

33 Indian Rock Road  
Windham, NH 03087  
1-800-5 NORRAD  
1-603-434-3979 FAX

Solutions For Industry



## DATA ENTRY SOFTWARE

### ✓-OUT VIKING DATA ENTRY

Before replacing yours, check-out the Viking Data Entry (VDE) System. Half of Fortune magazine's top 50 companies, numerous U.S. and foreign government agencies, and data entry service bureaus worldwide have discovered the benefits of VDE:

- Faster, easier keyboard entry and verification
- Insure accuracy with advanced data validation
- Multi-platform: MS/DOS, UNIX, VMS
- Save costs ... replace mainframe data entry
- Real-time "Customer Care" support

Call now for our VDE Features & Functions Checklist

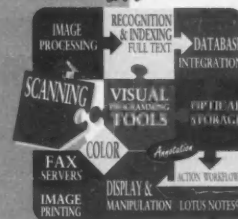
Compare VDE features with an existing system or one you're considering buying.

Viking Software Services, Inc.

**800-324-0595**  
Ph:918/491-6144 • Fx:918/494-2701

## WINDOWS IMAGING

### IMAGE BASIC



Imaging Magazine  
Product of the Year

- Customize ALL aspects of your imaging system using Visual Basic, SQL, Windows, Visual C++, or dBase for Windows
  - Industry standard components are in use by over 120,000 users
  - 30-day money-back guarantee eliminates risk of trying product
- DIAMOND HEAD SOFTWARE, INC.**  
Call: 1-800-8TTOOLS FAX: (808) 545-7042

## PROGRAMMING HURDLES

### Getting You Down?

*You've Turned  
to the  
Right Place!*

Because...every week, you'll  
find the right tools for the right  
jobs — right here.

In the new

**Application  
Developer's Toolbox**  
in Computerworld Marketplace.

- Tools to build applications that are portable across a multitude of platforms.
- Tools that speed application development and make programming much less painful.
- And tools for mission-critical applications that improve your organization's competitiveness.

So turn here again next issue  
— and every issue  
— for expert help in overcoming  
your programming hurdles!

## COBOL TOOLS

### SE/One

**ORDER  
SE/One  
NOW.  
Only \$495**

The COBOL Program understanding tool. Find data routine problems. Metrics, structure analysis, interactive analysis, coding quality assessment, standards compliance. For maintenance and quality assurance.

**800-457-3113**

Fax: 404-667-9417



**Software Electrics, Inc.**  
Suite 131, 10255 Jones Bridge Rd.  
Alpharetta, GA 30202-7543

# Solutions Directory

## 401(k) ADMINISTRATION

**DELTA DATA SERVICES, INC.**  
(800) 451-8188  
Defined contribution administration software for the plan sponsor. Interfaces with payroll to administer 401K, ESOP, thrift, and profit sharing plans. Daily or periodic processing, distributions, loans, ADP/ACP testing. User defined statements, voice response. Runs on AS/400.

## ACCOUNTING

**M • A • S 90 EVOLUTION/2 Accounting Software at Discount Prices?**  
Pay DISCOUNTED prices for the premier accounting solution. Industrial strength GL, A/P, A/R, Payroll (with multiple city/state taxation), J/C, P/O, Sales Order, Point of Sale, Inv Mgmt, Time & Billing, many others. Dos/Windows/UNIX platforms supported.  
**CORLOR Development, Inc.** (505) 281-7151

## APPLICATIONS CONVERSION

**AUTOMATED CONVERSION SPECIALISTS**  
DOS to MVS HONEYWELL to IBM  
MACRO to COMMAND CSP to COBOL/CICS  
RPG to COBOL COBOL to COBOL II  
PL/I to COBOL CENTURY EXPANSION  
Other Platform/Language Conversions  
**BECAUTON COMPUTER SERVICES, INC.**  
(800) 821-2861 216-552-1628

**MIGRATION - CONSOLIDATION SERVICES:**  
VSE to MVS Migrations/MVS Re-Design  
Data Center Consolidations  
DFSMS Migrations  
Project Management  
COBOL/VS to COBOL/II/370 Conversions  
**Systems Integration & Re-Design, Inc.**  
(504) 634-2253

## APPLICATIONS DEVELOPMENT

**APPLICATION DEVELOPER'S TOOLBOX**  
See proceeding page in MarketPlace.

PC programming, DOS/WINDOWS \$30/hr. Courseware  
Appl. .... (612) 854-9909 Fax (612) 854-1868

**Tired of maintaining your legacy applications?**  
LPC ..... (800) 824-5377

## C++

**C++ and Object Technology Training**  
5-day, on-site seminars on C++, Visual C++, Borland C++, OOA/ODD, Visual Basic, and C. We customize our courses to your needs. Contact us today for course outlines and pricing.  
**DEITEL & ASSOCIATES**  
daitel@world.std.com  
Phone: (808) 877-0273 FAX: (808) 788-0837

C++ Training, Design, Emergency Code Repairs.  
Rowe Technology ..... (406) 375-9449

## CLIENT SERVER DEVELOPERS

**Re-Engineer NOW!!!**  
Let our highly motivated professionals help your corporation make the successful transition from your existing mission critical applications into object-oriented client/server systems. Powerbuilder, C/C++, Visual Basic, Sybase/Oracle/Informix, Imaging, Wireless, ISP.  
**Innovative Information Technologies, Inc.**  
1-800-352-2797

**Millennium Computer Corp. "Quality Solutions"**  
On Schedule, Within Budget ..... (716) 248-0510

**NIIT - Software Division** ..... (404) 804-6446  
Developers of client server applications using Sybase and Oracle. Option for offshore software development available. For more information, contact us at 400 Perimeter Center Terrace, Suite 900, Atlanta, GA 30346. Fax: (404) 804-6445.

## COMPUTER/TEL INTEGRATION

**Computer/Telephone Integration**  
Consulting & Design  
Expert guidance for the medium to large call center environment. AN/DNS routing - Call/Data-screen synchronization - Caller Profile call routing. Functional Specifications - Design-Documentation.  
**Get it right the 1st time!**  
**INSIGHT SERVICES 1-800-877-9024**

## CONTRACT PROGRAMMING

Client/Server Solutions using PowerBuilder, VAX/UNIX  
Accuobol, Accurate Data Systems ..... (305) 864-3835

**NASTEL Technologies**  
Prime source for cost effective, high quality, on-site/offsite software development. Expertise in Oracle, Informix, Sybase, Powerbuilder, Client Server applications, re-engineering (multimedia, windows) and CAD conversions. Reliable delivery. Excellent References.  
(212) 251-0787 Fax 212-489-4950

**SAVE 50%-70% ON PROGRAMMING**  
While using some of the most sophisticated programmers in the world. All customer contact handled in the U.S.  
• Client Server  
• New Application Development  
• Updating & Porting to New Platforms  
**Typhoon Software, Inc.**  
800-489-0888

## DATA RECOVERY

**RANDOMEX Data Recovery Service**  
Hard Drives - Tapes - Floppies - Disk Packs  
Crashes/Power Failures/Viruses/Fire  
Average Turnaround 72 Hours  
96% Success Rate On Recoverable Data  
14 Years Experience \* 23 Operating Systems  
800-728-3668 (Long Beach, CA)  
800-486-0693 (Boston, MA)

## DATA WAREHOUSING

**The Data Warehouse Experts**  
Looking for a company with years of experience in true Data Warehouse implementation? Look no further! Let Solvite help unlock the power of your information system!  
**Solvite, Inc.**  
(800) 999-4829

## DISASTER RECOVERY

**CHI/COR Information Management, Inc.**  
Recovery Planning Software ..... (800) 448-8777

## EDUCATION & TRAINING

**Information Security Training & Publications**  
CSI Membership includes: monthly newsletter, buyers guide, journal, training discounts, hotline, networking, more. Seminars, conferences, June Network Security Conference in New Orleans. For free sample newsletter and information:  
Fax (415) 905-2218, CSI, 600 Harrison St. SF, CA 94107, phone (415) 905-2626, e-mail: prapalus@miti.com.

**NIIT - Training Division** ..... (404) 804-6446  
Developers of custom Computer Based Training (CBT), Multimedia, and Performance Support Systems. Development site is ISO-9001 certified. For more information, contact us at 400 Perimeter Center Terrace, Suite 900, Atlanta, GA 30346. Fax: (404) 804-6445.

**Visual Basic, C++, OOA-ODD, ORACLE**  
Taxesa Software ..... (800) 252-7007

**EASY TECHNICAL UPDATING**  
50-Minute videos, \$29.95 each, on today's crucial topics (client/server, OOPS, software engineering, networking, AI) by over 40 leaders (Stroustrup, Bell, Kruth, Microsoft, etc.) CONTACT: UVC, Inc. 1-800-500-1510 x1112; uvc-lemon@lorelythe.stanford.edu. FREE CATALOG. SATISFACTION GUARANTEED.

## ELECT. DATA INTERCHANGE

EDI software, consulting, & integration  
Next Edition, Inc., 14+ yrs exp. .... (216) 498-0602

## GROUPWARE LOTUS NOTES

Nationwide Professional Services  
Summit Software Services, Inc. .... (503) 226-6250

## I/T CONSULTING

**ITM, Inc. (617) 489-3639**  
Focus: Development Productivity, Data Management, Strategic Planning, Staff Augmentation; Custom, business aligned methodologies (writing, Bus. Proc. Re-Eng. & Data Mgmt), Impl. Coaching, Meth. Educ.; CASE, GUI PowerBuilder (Dev. & Proj. Mgrs.), Info Modelers, etc. Data Warehousing & Admin., I/T Planning, Arch. Des. **We help you use I/T to create Business Value through Organizational Success.**

## MCBA

**SYSTEMS DESIGN & SERVICES, INC.** - (708) 894-1874  
Specializing in support, enhancements, upgrades, conversions. Established 1982. ALL applications, releases, versions, languages, operating systems, NEW UNIX/AS/400 SOFTWARE FOR: ACCOUNTING, DISTRIBUTION, MANUFACTURING, HUMAN RESOURCES, 4GL.

## OFFSHORE SOFTWARE DEV.

**COSTA RICA - "A BETTER WAY"**  
Low-cost, hi-quality offshore programming. Central Time Zone, 3 hour flight from USA. Satellite Links. Oracle, Visual Basic, Powerbuilder, Sybase, C++, COBOL, AS400.  
**Hestair, Houston** ..... (800) 448-7277

**Haxware Technologies - A Blue Chip Resume:**  
• Client/Server technology focus  
• Oracle, Sybase  
• Powerbuilder, Uniface, Visual Basic  
• Complete Turnkey responsibility  
• Virtual 64 kbps data link from your office to India  
• State-of-the-art software development center in India.....  
• Large pool of quality software talent  
• International quality standards  
• Success stories in US/Middle East/India  
• Joint Venture option  
Tel: (800) 951-8185; Fax: (808) 851-9838;  
Partner for Success  
**Haxware Technologies, Inc.**  
Princeton • Bombay • Bahrain • Damman

**Serving the Northwest USA**  
• Providers of quality software development. Options for Joint Ventures. Services:  
New Development Re-engineering Migration Client-Server/PC/RDBMS Testing/QA Product Enhancement  
**LINCROSS SOFTWARE SYSTEMS, INC.**  
(208) 236-5847  
INDIA • SINGAPORE

## OFF-SITE SOFTWARE DEV.

Powerbuilder/ORACLE/SYBASE/etc. C/S Applications PowerSource, Inc. .... (804) 229-2554

## OUTSOURCING

**ALICOMP and CBS Data Services formed a business alliance to offer the highest level of technical, operational, and managerial expertise within a single mandate: loyalty and the highest quality computer services with flexible pricing.**

**ALICOMP/CBS**  
(800) 274-5586  
(See Our Ad in the MarketPlace)

**Outsourcing/Remote Computing**  
IBM, MVS/ESA  
**Transitional Outsourcing**  
Specializing in high online transaction environments, Multiple mainframes, Reasonable prices  
Contact: Cary Gibson  
(800) 358-2381 ext. 330

**ISO 9001 CERTIFIED OFF-SHORE/ ON-SITE SOFTWARE SERVICES**  
Substantial cost savings on Development, Maintenance, Conversion, Rightizing using Indian facility with in-house IBM 5000, AS/400, RS 6000, SUN and CICS, DB2, IMS, COBOL, RPG, SYN, ON, Oracle, Sybase, Visual Basic, Powerbuilder, Uniface, C++.  
**D Square Software, Inc.**  
Tel: (908) 632-2688 Fax: (908) 632-2892

**FANEUL SYSTEMS** provides mainframe based Outsourcing and Remote Computing Services for well over a decade. Our reputation for providing high quality services in a flexible and cost effective manner is undisputed in the industry. Join the many others who have already made the right choice, call **FANEUL SYSTEMS** at (708) 574-3838. (See Our Ad in the MarketPlace Section)

**OUTSOURCING/REMOTE COMPUTING**  
For 25 years we have nationally located outsourcing services on all platforms from over 2,000 data centers. **NEVER** a fee to our buyers because we are paid by our sellers. Call us today and join over 1,500 satisfied customers!  
**COMPUTER RESERVES, INC.**  
(800) 882-0988

**FINANCIAL TECHNOLOGIES COMPUTER SERVICES DIVISION**  
(703) 631-4401  
OUTSOURCING - REMOTE PROCESSING  
Multiple IBM E55000 Mainframes  
MVS/ESA VM/ESA  
Current Software Releases,  
7 days/week, 24 hours/day  
**Quality Service - Competitive Pricing**

**MCRB Service Bureau, Inc.**  
3090 Computer Services ..... (800) 941-MCRB

## PC SOLUTIONS

**Micro Focus COBOL, Dialog System, Panel2 solutions.** Next Edition, Inc. .... (216) 498-0902

## PURCHASING SOFTWARE

**Commerce Software, Inc. (PurchaseSQLs)**  
Elmsford, NY ..... (800) 447-7172

## REMOTE COMPUTING

**ALICOMP, Inc.** ..... (800) 274-5556  
(See Our Ad in the MarketPlace)

**FANEUL SYSTEMS** provides mainframe based Outsourcing and Remote Computing Services for well over a decade. Our reputation for providing high quality services in a flexible and cost effective manner is undisputed in the industry. Join the many others who have already made the right choice, call **FANEUL SYSTEMS** at (708) 574-3838. (See Our Ad in the MarketPlace Section)

## RIGHTSIZING

**MCRB Service Bureau, Inc.**  
3090 Computer Services ..... (800) 941-MCRB

## SOFTWARE REENGINEERING

**Reuse Your Existing Software Assets**  
• Computer language translation and migration reengineering services converting into C, C++, Ada, and COBOL  
• Services guaranteed for functionality, maintainability, price, delivery date  
• Language and platform independent  
**Alydear Software Corporation:**  
(504) 845-3322

## SOFTWARE REUSE

**RPM®**  
**Reuse Process Manager®**  
"a windows and C/S based process manager with a customizable environment for defining, measuring and practicing reuse-driven software development"  
developed by Dr. Camma McCure  
**Extended Intelligence, Inc.**  
(312) 346-5245 x380





# Companies in this issue

Page number refers to page on which story begins

3M Optical System.....	45	Dr Pepper Co./The Seven-Up Co.....	12	Mega Drive Systems, Inc.....	54	Sequent Computer Systems, Inc.....	8
<b>A</b>		Dun & Bradstreet Software.....	12	Meridian Data, Inc.....	33	Silicon Graphics, Inc.....	7
ABB Power T&D Co.....	51	<b>E</b>		Merrill Lynch & Co.....	16	Solbourne Computer, Inc.....	47
Aberdeen Group.....	16,57,60,77	Earle M. Jorgensen Co.....	8	Meta Group, Inc.....	16	Southern California Edison.....	12
Accessible Archives.....	44	Elan Software Corp.....	109	Metrom, Inc.....	4	Southwestern Bell Telephone.....	100
Advanced Micro Devices, Inc.....	16,33	Electronic Frontier Foundation.....	1,28	Micro Data Base Systems, Inc.....	4	Stanford University.....	16
Alm Technology, Inc.....	60	Entergy Services, Inc.....	54	Micro Research Industries.....	57	Strategic Networks Consulting, Inc.....	60
Air Products, Inc.....	60	Environmental Protection Agency.....	109	Micro-Frame Technologies, Inc.....	54	Sun Microsystems, Inc.....	7,16,33,47
Aironet Wireless Communications, Inc.....	4	Ernst & Young.....	96	MicroAge, Inc.....	33	Sun Technology Business.....	47
Ameritech Corp.....	4	Evans & Sutherland Computer Corp.....	33	Micrografix, Inc.....	45	Sybase, Inc.....	1,4,77,80
Answer Systems, Inc.....	51	Evolutionary Technologies, Inc.....	12	Microrim, Inc.....	77	Symantec Corp.....	77
Apple Computer, Inc.....	8,41,96	<b>F</b>		Microsoft Corp.....	1,4,7,8,16,39,41,47,54,57	Syntax Ltd.....	51
Arthur D. Little, Inc.....	24	Ferris Networks.....	1	Mobile Telecommunication Technologies Corp.....	8	<b>T</b>	
Aspen Systems, Inc.....	12	Fidelity Investment Co.....	1,91	Motorola, Inc.....	7,8,16,65,96	Taco Bell Corp.....	41
AT&T Corp.....	51	Fluor Daniel, Inc.....	54,77	<b>N</b>		Taligent, Inc.....	41,97
AT&T Global Information Solutions.....	10	Fujitsu Ltd.....	7	National Embossing Co.....	109	Tandem Computers, Inc.....	10
Attachmate Corp.....	33	Funk Software, Inc.....	65	National Management Systems.....	51	Tatung Science & Technology, Inc.....	47
Ausplex Systems, Inc.....	7,47	<b>G</b>		National Security Agency.....	1	Tellabs, Inc.....	1
<b>B</b>		Gartner Group, Inc.....	1,97,100	NationsBank Corp.....	1,84	Terisa Systems, Inc.....	6
BankAmerica Corp.....	16	Gateway 2000, Inc.....	1,33	NEC Technologies, Inc.....	12	Texaco, Inc.....	100
Bell Atlantic Mobile Systems.....	4	Genicom Corp.....	45	NetFrame Systems, Inc.....	54	Texas Instruments, Inc.....	33
Bergen County Utilities Authority.....	12	Genicom Corp.....	45	Netscape Communications Corp.....	6	The Aerospace Corp.....	41
Biscom, Inc.....	54	Grand Junction Networks, Inc.....	60	Network General Corp.....	60	The Boeing Co.....	96
Body Shop.....	77	GTE Corp.....	8	Network Translation, Inc.....	6	The Genix Group.....	8
Bolt Beranek & Newman, Inc.....	1	Gupta Corp.....	77	Northwest, Inc.....	60	The Home Depot, Inc.....	91
Book-of-the-Month Club, Inc.....	6	<b>H</b>		Next Computer, Inc.....	60	The Intermark Group, Ltd.....	6
Borland International, Inc.....	8,14	Hewlett-Packard Co.....	1,7,8,12,16,41,64,65	Novell, Inc.....	1,14,24,51,54,57,65,109	The Mathworks.....	1
BPOil, Inc.....	47	Hill, Steadman & Simpson.....	77	<b>O</b>		The New England.....	4
BSG Corp.....	84	Hoechst Celanese.....	1	Object Management Group.....	16	The Santa Cruz Operation.....	6
Burlington Northern Railroad.....	60	Hughes Hubbard & Reed.....	1	ObjectPlus Corp.....	81	The Smaby Group, Inc.....	33
<b>C</b>		Hughes LAN Systems, Inc.....	65	OCR Services, Inc.....	51	The Standish Group International, Inc.....	20
Carnegie Mellon University.....	6	Hurwitz Consulting Group, Inc.....	77	Ontario Store Fixtures.....	77	The Yankee Group.....	4,16
Central Soya.....	24	<b>I</b>		Open Environment Corp.....	77	Timberline Software Corp.....	60
Champion Duplicators, Inc.....	45	IBM.....	1,4,7,8,12,16,33,96,100	Oracle Corp.....	1,4,12	Toshiba Corp.....	51
Cheyenne Software, Inc.....	8	IBM Credit Corp.....	12	<b>P</b>		Tracker Software, Inc.....	51
CIMI Corp.....	6	IBM PC Co.....	12	Pacific Gas & Electric Co.....	10	Transarc Corp.....	12
Cisco Systems, Inc.....	60	IBM PC Co.....	12	Pacific Palisades.....	109	Transco Energy Co.....	77
Columbia/HCA Information Services, Inc.....	24	Illustra Information Technologies, Inc.....	4	Parallan Computer, Inc.....	33	Trusted Information Systems, Inc.....	1
Commerce Clearing House, Inc.....	16	In-Stat Research, Inc.....	33	Patricia Seybold Group.....	12	TST International Software.....	100
CommerceLink.....	101	Integrax, Inc.....	47	PepsiCo, Inc.....	1	<b>U</b>	
Communications Network Architects, Inc.....	12	Intel Corp.....	1,4,8,10,33,96,97,121	Performance Computing, Inc.....	4	UB Networks, Inc.....	60
Compaq Computer Corp.....	10,12,14,33	Intergraph Corp.....	7	Pine Mountain Group, Inc.....	65	U.S. Postal Service.....	12
CompuServe, Inc.....	41	International Data Corp.....	1,7,12,20	Pizza Hut, Inc.....	6	Unify Corp.....	33
Computer Associates International, Inc.....	16	<b>J</b>		Platform Systems Corp.....	1	Union Pacific Technologies.....	47
Computer Intelligence InfoCorp.....	57	Joseph E. Seagram & Sons.....	20	Powersoft Corp.....	4,77,80	United Behavioral Systems.....	77
Cornish & Carey Residential Real Estate.....	41	<b>K</b>		Preferred Systems, Inc.....	60	United Healthcare Corp.....	77
Cray Research, Inc.....	7,33,47	KLA Instruments Corp.....	6	Primavera Systems, Inc.....	54	University of Florida.....	28,77
Creative Networks.....	1,24	<b>L</b>		Proportional Software.....	45	US West Marketing Resources Group.....	41
Cyrix Corp.....	33,47	Lannet Data Communications, Inc.....	65	<b>Q</b>		US West, Inc.....	41
<b>D</b>		Legend Corp.....	12	Quality Technology Decisions, Inc.....	77	<b>V</b>	
Dartmouth Hitchcock Medical Center.....	57	Lehman Brothers, Inc.....	8	<b>R</b>		Villanova University.....	28
Dataquest, Inc.....	54,60,109	London Life Insurance Co.....	1	RDI Computer Corp.....	47	Visa International, Inc.....	4,96
Decisis, Inc.....	6,57	Lotus Consulting Services Group.....	84	Reynolds Metals Co.....	6	<b>W</b>	
DeKalb Genetics Corp.....	51	Lotus Development Corp.....	12,14,41	Rife-Aid Corp.....	6	WordPerfect.....	41,109
Dell Computer Corp.....	1,33	<b>M</b>		Robertson, Stephens & Co.....	1	WorkGroup Technologies, Inc.....	12
Delrina Corp.....	19	Management Information Technologies, Inc.....	45	Ross Technologies, Inc.....	7,47	Wyse Technology, Inc.....	45
Destineer Corp.....	8	MCI Communications Corp.....	57	RSA Data Security, Inc.....	28	<b>X</b>	
Detroit Edison.....	100	<b>S</b>		<b>S</b>		X/Open Co.....	8
Digital Equipment Corp.....	1,16	S. G. Warburg & Co.....	33	S. G. Warburg & Co.....	33	Xcelsius, Inc.....	47
Domeq Importers, Inc.....	84	Sakris Systems.....	109	Sakris Systems.....	109	Xerox Corp.....	8
Dr Pepper Bottling Co.....	60	<b>S</b>		SalesBook Systems.....	51		

# Dec. 9 Stock Ticker

## Gainers Losers

Percent

MAYNOR CORP.	20.0	INTELLIGENT ELECTRONICS (I)	-33.7
PENN. DATA COMM NETWORKS	13.2	BOLT, BERANEK & NEWMAN	-32.9
QUARTERBACK OFFICE SYS.	11.1	RASTEROPS	-25.0
WALKER INTERACTIVE SYSTEMS (I)	10.2	SAPPHIRE INTL. CORP. (N.V.)	-24.3
NETRIX CORP. (H)	9.1	EASEL CORP.	-24.0
MICOM COMMUNICATIONS CORP.	8.0	MATHSOFT	-19.6
TANDY CORP.	7.6	COMPUTERVISION CORP.	-17.2
SHARED MEDICAL SYSTEMS	7.3	DATAMART TECHNOLOGIES INC.	-16.7

Dollar

TANDY CORP.	3.38	BOLT, BERANEK & NEWMAN	-6.38
SHARED MEDICAL SYSTEMS	2.19	LOTUS DEVELOPMENT	-4.75
SYNOPSIS	2.13	INTELLIGENT ELECTRONICS (I)	-4.38
FOR SYSTEMS INC. (H)	1.88	XEROX CORP.	-4.13
AMERITECH CORP.	1.75	CABLETRON SYSTEMS	-4.13
GATEWAY 2000 INC.	1.50	CHIPCOM CORP.	-4.00
BELLSCOUT CORP.	1.50	COMPUMARK CORP.	-3.75
MICOM COMMUNICATIONS CORP.	1.13	TEXAS INSTRUMENTS	-3.50

## Trying to stay in good form

Wall Street analysts say business communications software maker **Delrina Corp.** (DENAF) is in good shape to face some upcoming challenges to its current lead in its market sector.

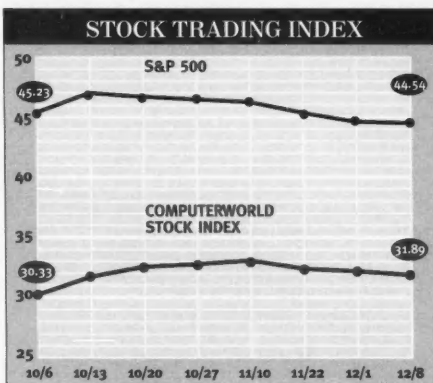
According to Lisa Thompson, an analyst at Punk, Ziegler & Knoell in New York, **Microsoft Corp.**'s inclusion of a fax feature in Windows 95, the next version of Windows, proved to be a blow to Delrina's stock. But the company's reputation is a solid one that will hold it in good stead against the competition, she said.

"Reviews of Microsoft's beta version suggest the fax feature is not going to be nearly as good as Delrina's WinFax," Thompson said. "And even if it is, they still have a strong user base who will likely want to upgrade."

Flexibility is another factor in Delrina's favor. "Their software can work with a variety of other programs. But competitors like Microsoft offer form programs, for example, that work only with their own product lines," Thompson noted.

Delrina has also successfully tackled the consumer retail market and plans to bring its Perform for Windows form product there soon, Thompson said. "There's virtually no competition for them in this segment. They are extremely good at bringing products to the mass market," she said.

Because the blow from Microsoft's announcement pushed Delrina's stock price down, Thompson said now is a good time to invest in the company. "This company is growing at over 100% a year. It isn't going to disappear any time soon," she said. —*Erin Callaway*



EXCH	52-WK RANGE	DEC 9	Wk Ht	Wk Pct	3-M	CHG	EXCH	52-WK RANGE	DEC 9	Wk Ht	Wk Pct	3-M	CHG
Communications & Network Services						OFF +3.7%	Semiconductors						OFF +3.1%
OTC	46.00 20.13	3 COM CORP.	41.63	-1.13	-2.6		OTC	18.75 2.25	KREWEHILLER INC.	3.94	0.00	0.0	
NYS	43.38 36.25	AMERITECH CORP.	41.00	1.75	4.5		OTC	28.75 19.00	LOGENT CORP.	28.75	-1.00	-4.5	
NYS	51.13 47.25	AT&T (I)	49.38	-0.13	-0.3		OTC	86.50 29.75	LOTUS DEVELOPMENT	39.50	-4.75	-10.7	
NYS	25.75 12.75	BANYAN SYSTEMS INC.	17.75	-1.50	-7.8		OTC	17.75 4.38	MAGIC SOFTWARE ENTERPRISES (I)	4.81	-0.06	-1.3	
OTC	43.88 46.50	BAY NETWORKS INC.	24.25	-0.63	-2.5		OTC	17.75 1.50	MARINO CORP.	21.25	0.00	0.0	
NYS	61.63 48.38	BELL ATLANTIC CORP. (I)	49.38	-0.13	-0.3		OTC	17.75 1.44	MATHSOFT	2.31	-0.56	-19.6	
NYS	63.50 50.50	BELLSOUTH CORP.	52.75	1.50	2.9		OTC	17.75 9.38	MENTOR GRAPHICS	13.00	1.50	9.7	
NYS	21.50 10.00	BOLT, BERANEK & NEWMAN	13.00	-6.38	-32.9		OTC	20.00 11.50	MICRO FOCUS	13.75	-0.50	-3.5	
NYS	15.75 9.00	BROOKTRUST TECHNOLOGY	11.00	-0.75	-6.4		OTC	11.63 4.63	MICROGRAPHY INC.	5.38	-0.13	-2.3	
NYS	33.50 33.00	CABLETRON SYSTEMS	42.75	-4.13	-8.8		OTC	65.13 39.00	MICROSOFT CORP.	62.50	0.25	0.4	
OTC	43.00 10.00	CENTRIM COMMUNICATIONS	18.75	-1.56	-7.7		OTC	31.00 11.25	NETMANAGE INC.	25.00	-0.25	-1.0	
OTC	45.00 21.00	CHIPCOM CORP.	35.75	-4.00	-10.1		OTC	26.50 26.25	ORACLE CORP.	38.69	-1.19	-3.0	
OTC	40.75 18.75	CISCO SYSTEMS INC.	31.25	-1.00	-3.1		OTC	40.50 21.50	PARAMETRIC TECHNOLOGY	32.75	-1.88	-5.4	
OTC	16.13 6.50	COMPRESSION LABS INC.	6.50	-0.63	-8.8		OTC	24.50 13.38	PARKPLACE SYSTEMS INC.	18.00	-0.81	-4.3	
OTC	12.38 5.13	COMPUTER NETWORK TECH.	6.44	-0.31	-4.6		OTC	67.75 26.00	PEOPLESOFT (H)	61.50	0.31	0.5	
OTC	29.25 7.50	CROSSCOM	8.50	-1.00	-10.5		OTC	8.13 3.75	PHOENIX TECHNOLOGIES	6.88	0.00	0.0	
OTC	3.00 1.50	DATA SWITCH CORP.	2.38	-0.13	-5.0		OTC	77.75 34.00	POWERSOFT	73.88	0.38	0.5	
OTC	35.00 17.88	DSC COMMUNICATIONS	27.75	-1.88	-6.3		OTC	29.75 3.50	PLATINUM SOFTWARE	10.88	-1.18	-11.2	
OTC	62.00 20.00	FORE SYSTEMS INC. (H)	58.25	1.88	3.3		OTC	73.75 9.13	PLATINUM TECHNOLOGY	18.63	-0.13	-0.7	
NYS	34.88 8.25	GENERAL DATA COMM. INC.	26.25	0.00	0.0		OTC	56.75 27.00	PROGRESS SOFTWARE CORP.	36.63	-0.38	-1.0	
NYS	36.38 29.50	GTE CORP.	30.25	0.00	0.0		OTC	4.13 1.88	QUARTERBACK OFFICE SYS.	2.50	-0.25	-11.1	
NYS	95.97 77.00	ITT CORP. (I)	79.13	-0.50	-0.6		OTC	24.00 9.50	RAINBOW TECHNOLOGIES INC.	12.63	-0.25	-1.9	
OTC	29.00 18.81	MCI COMMUNICATIONS CORP.	19.13	0.00	0.0		OTC	9.25 2.25	RASTEROPS	7.25	-0.75	-25.0	
OTC	15.75 8.13	MICOM COMMUNICATIONS CORP.	15.13	1.13	8.0		OTC	8.50 2.88	ROSS SYSTEMS	4.75	-0.25	-5.0	
OTC	10.63 4.00	MICROCOM	9.00	-0.88	-9.9		OTC	36.13 1.75	SAPPHIRE INTL. CORP. (N.V.)	1.75	-0.38	-21.5	
OTC	8.25 4.00	NETRIX CORP. (H)	7.50	0.63	9.1		OTC	21.50 9.75	SOFTKEY INTERNATIONAL INC. (H)	19.88	0.13	0.6	
OTC	8.75 3.25	NETWORK COMPUTING DEVICES	4.00	-0.25	-5.9		OTC	8.50 3.00	SOFTWARE PUBLISHING CORP.	4.63	-0.75	-14.0	
OTC	22.25 7.38	NETWORK EQUIPMENT TECH.	21.00	0.63	9.1		OTC	5.00 2.88	STATE OF MARY	13.88	-0.88	-5.7	
OTC	23.38 13.88	NETWORK GENERAL	21.00	-0.38	-1.8		NYS	35.63 25.00	STERLING SOFTWARE INC.	31.63	-0.38	-1.2	
OTC	9.63 6.38	NETWORK SYSTEMS CORP.	7.25	-0.25	-3.3		OTC	19.88 3.63	STOCK DYNAMICS RESEARCH	6.25	0.00	0.0	
NYS	25.75 16.50	NEWPORT NEWS NETWORKS CORP.	25.00	-0.50	-1.3		OTC	57.00 12.88	SYNADIS INC.	17.13	-0.38	-2.2	
NYS	37.75 26.00	NORTHERN TELECOM INTL.	31.75	-0.50	-1.6		OTC	19.63 9.88	SYNANTEC CORP.	17.00	-0.25	-1.4	
OTC	26.63 13.38	NOVELL INC.	17.81	-1.56	-8.1		OTC	48.75 33.00	SYNOPSIS	42.88	2.13	5.2	
OTC	42.63 33.25	NYNEX CORP. (I)	39.00	-0.50	-1.3		OTC	18.00 10.63	SYSTEM SOFTWARE ASSOC.	14.75	-0.75	-5.2	
OTC	30.00 15.50	OPTICAL COMMUNICATIONS CORP.	18.25	-1.33	-14.6		OTC	6.75 3.25	TECHNICAL CORP.	13.88	-0.88	-5.7	
OTC	26.50 10.75	OPTICAL DATA SYSTEMS INC.	22.00	-0.25	-9.3		OTC	30.00 11.75	TELELOGIC SYSTEMS	18.75	-1.50	-7.4	
OTC	7.50 2.13	PENN. DATA COMM NETWORKS	2.69	0.31	13.2		OTC	23.25 12.25	VIEWARK SOFTWARE INC.	14.88	-0.88	-6.3	
OTC	22.63 10.00	PICTURETECH CORP.	19.75	-2.00	-9.2		OTC	17.25 5.75	WALKER INTERACTIVE SYSTEMS (I)	12.63	-0.38	-10.2	
OTC	7.88 2.13	PROTEON INC.	5.63	0.06	1.1		OTC	20.00 29.25	WALL DATA INC.	34.00	-1.50	-4.2	
OTC	14.38 2.75	RASTEROPS	3.63	-0.25	-6.5								
OTC	14.25 4.25	RETEX	4.38	-0.50	-10.3								
NYS	23.25 12.44	SCIENTIFIC ATLANTA INC.	19.63	0.38	1.9								
NYS	45.25 36.75	SOUTHWESTERN BELL CORP.	41.00	-0.13	-0.3								
OTC	40.13 28.63	SPRINT RESEARCH (I)	39.00	0.50	1.7								
OTC	26.75 13.38	STANDARD MICROSYSTEMS CORP.	21.88	-1.50	-6.3								
OTC	60.00 13.00	STRATACOM INC.	56.00	1.00	1.8								
OTC	15.25 3.88	TELENET CORP.	12.88	-0.88	-6.9								
OTC	41.00 24.00	US ROBOTICS	34.25	-3.00	-8.1								
NYS	42.25 34.63	US WEST INC. (I)	35.00	-0.13	-0.4								
NYS	25.25 12.75	VARIAN INC.	18.88	-0.88	-4.9								
OTC	22.50 6.63	XYLOGICS INC. (H)	19.75	-0.25	-1.3								
PCs and Workstations						OFF +0.87%	Peripherals and Subsystems						OFF +3.29%
OTC	7.50 3.00	ADVANCED LOGIC RESEARCH	4.25	-0.38	-8.1		OTC	30.50 14.50	AMERICAN POWER CONVERSION	15.50	-1.00	-6.1	
OTC	24.63 12.63	APPLE COMPUTER INC.	35.75	-0.63	-1.7		OTC	27.25 18.25	BANCTEC INC.	20.84	-0.91	-4.2	
OTC	33.00 10.38	SPRINT RESEARCH (I)	31.75	-0.50	-1.7		OTC	3.25 3.25	CANON CORP.	3.69	-0.19	-4.8	
OTC	42.00 23.41	COMPAG COMPUTER CORP.	39.63	0.75	1.9		ASE	5.25 1.38	CORNING CORP.	1.56	-0.25	-13.8	
OTC	47.38 19.13	DELTA COMPUTER CORP.	40.13	-0.94	-2.3		NYS	20.50 10.25	CONCEPT PERIPHERALS	12.25	-0.25	-2.0	
OTC	25.00 9.25	GATEWAY 2000 INC.	22.25	-1.50	-6.2		OTC	24.00 9.75	CREATIVE TECHNOLOGIES	12.25	-0.25	-2.0	
NYS	102.50 71.88	HEWLETT PACKARD CO.	94.25	-2.13	-2.2		OTC	13.25 3.50	DATACORP INC.	4.00	-0.38	-8.6	
NYS	33.13 18.75	SILICON GRAPHICS INC.	28.63	-0.63	-2.1		ASE	9.25 4.13	DATARAM CORP.	5.88	-0.50	-7.8	
OTC	14.50 18.25	SUN MICROSYSTEMS CORP.	11.63	-0.88	-7.7		OTC	24.00 12.38	EMC CORP.	17.88	-2.13	-10.6	
NYS	50.75 30.75	TANDY CORP.	47.88	3.38	7.6		OTC	12.38 3.13	EMULEX CORP.	11.50	0.13	1.1	
OTC	9.00 2.38	ZEOS INTERNATIONAL LTD. (H)	8.13	-0.88	-9.7		OTC	21.00 11.25	EVANS & SUTHERLAND	12.50	-1.25	-9.1	
Large Systems						OFF +0.76%	OTC	14.00 14.00	EXABYTE	17.88	-2.13	-10.6	
ASE	10.88 5.25	AMBAH CORP.	9.63	-0.13	-1.3		OTC	26.88 2.38	INTELLIGENT INFO. SYSTEMS (I)	2.44	-0.31	-11.4	
NYS	8.88 4.38	CONVEY COMPUTER	6.00	-0.25	-4.0		OTC	3.59 1.59	IONEGA CORP.	3.06	-0.31	-9.3	
OTC	3.00 0.50	CRAY COMPUTER	1.00	-0.19	-15.8		OTC	9.75 2.38	IPL SYSTEMS INC.	2.38	-0.38	-13.6	
OTC	33.13 17.38	SPRINT RESEARCH (I)	31.75	-0.50	-1.7		OTC	26.88 15.75	KONAMI INC.	15.00	-0.38	-2.8	
NYS	12.00 6.63	DATA GENERAL CORP.	9.88	-0.38	-3.7		OTC	8.63 2.63	KOMAX CORP.	5.25	-0.88	-16.0	
NYS	38.13 18.25	DIGITAL EQUIPMENT CORP.	32.50	-0.38	-1.1		OTC	9.38 4.88	MICROPOLIS CORP.	9.31	0.31	3.5	
OTC	6.38 2.38	ENCORE COMPUTER CORP.	4.41	-0.50	-12.2		OTC	20.50 9.25	PHARMALIA MICRO (H)	10.50	0.38	3.7	
OTC	17.50 6.50	HARRIS COMPUTER SYSTEMS CORP.	10.75	-0.75	-6.5		OTC	33.00 6.00	PRINTRONIX INC. (I)	30.50	1.00	3.4	
OTC	76.38 51.38	IBM	70.50	0.25	0.4		OTC	10.75 6.88	QMS INC.	8.00	-0.25	-3.0	
OTC	7.50 7.50	NEUTRAME	7.63	0.50	6.2		OTC	20.50 11.63	QUANTUM CORP.	19.00	0.38	2.4	
OTC	14.50 3.88	PARALLAN COMPUTER	4.50	-0.50	-10.0		OTC	18.25 7.38	RADIOUS INC.	8.38	-1.25	-13.0	
OTC	16.50 5.38	PERMATEC TECHNOLOGY	10.88	-0.13	-1.2		NYS	15.25 6.38	RECOGNITION INTERNATIONAL	7.38	0.25	3.5	
OTC	20.13 11.13	SEQUENT COMPUTER SYS.	17.88	-1.00	-5.3		OTC	6.88 6.88	REXON INC.	5.00	-1.00	-20.0	
OTC	6.88 3.38	SEQUENIA SYSTEMS INC.	3.38	-0.13	-3.6		OTC	28.75 18.63	SEAGATE TECHNOLOGY	24.38	0.38	1.6	



"LOOK. IN HEAD-TO-HEAD PRICE/PERFORMANCE,  
ORACLE TURNS TAIL."

TPC-C™ PUBLISHED  
PRICE/PERFORMANCE RESULTS

PLATFORM	SYBASE	ORACLE
AT&T	INDUSTRY LEADING	NONE
IBM	INDUSTRY LEADING	NONE
HP	INDUSTRY LEADING	NONE

The results are clear: while Sybase has mastered real-world performance, Oracle has mastered the art of omission. It's no wonder Oracle has avoided head-to-head TPC-C competition. In another real-world benchmark on Sun, Sybase more than doubled Oracle's published back-up and restore rate – while maintaining high throughput for OLTP and decision support. For the hard numbers on mixed-load performance, call 1-800-SYBASE-1, ext. 6410.



**SYBASE®**

THE ENTERPRISE CLIENT/SERVER COMPANY

Outside the U.S., call (410) 224-8044. © 1994 Sybase, Inc. SYBASE is a registered trademark of Sybase, Inc. TPC-C is a trademark of the Transaction Processing Performance Council (TPC). Other company or product names may be trademarks of their respective holders.



## Intel policy incites

CONTINUED FROM PAGE 1

decision not to go public with the Pentium flaw when the company discovered it several months ago, users seemed particularly riled over the following:

- Intel's perceived hesitancy to replace buggy chips for all those who want new ones.
- Continued uncertainty about Intel's timetable for volume delivery of redesigned Pentium chips.

### Strength in numbers

"If we don't get replacements for our chips, we are thinking of pooling our resources and filing a general class-action lawsuit against the company" for product liability and misrepresentation, said Randal Martinez, president of Platform Systems Corp., a consultancy in Washington. *Computerworld* encountered at least eight other users on the Internet who said they would be willing to join an action against Intel if their chips were not unconditionally replaced.

Like most users who have complained about the bug, Martinez contends that Intel should replace flawed chips without users having to prove their applications warrant such a replacement.

While noting that Intel is correct in asserting that users are very unlikely to encounter the bug, Cleve Moler,

a scientist at The Mathworks in Natick, Mass., said the issue at hand is "a lack of confidence" in the product.

Despite similar sentiments from other users on the Internet and threats to take Intel to court if it does not replace the buggy chips, most industry observers say such efforts will be hard to push.

"You can only sue the person you have a contractual obligation with," said Esther Roditti, editor of "Computer Law and Tax Reports," a newsletter in New York. Because systems vendors, and not Intel, sell the chips to end users, no direct relationship exists between Intel and the consumer, Roditti said.

A lot depends on the contracts and warranties Intel has in place with hardware vendors, Roditti maintained. "It will be very unusual for [a company like Intel] not to have drawn up warranties that protect it in such cases," she said.

However, Intel's failure to disclose details of the flaw could open it to possible action on grounds of misrepresentation and fraud, Roditti conceded.

"If it can be shown that Intel had a positive obligation within a reasonable time frame" to inform customers, users could have a cause of action in tort, she said.

Intel, meanwhile, said it is keeping all communications lines open with its customers. Last week, apart from the fax-back services and toll-free help lines it established, the company added another site on the Internet where users could gripe about their Pentium-related problems, an Intel spokeswoman said.

While many Internet users continued to rage at Intel for its apparent lack of responsiveness to the situation, many other users who had reached the company by late last week claimed they were satisfied with its actions.

For instance, one user, who uses a Pentium-based system to calculate doses of medicine for patients, claimed Intel contacted her after seeing her posting on the Internet.

"The Intel representative said that we—I guess Intel—would not want to expose patients to this risk at all. She put me on the list for a new processor immediately. I was stunned after reading all the posts on the 'net about being denied a new processor," she said.

Intel is also offering a lifetime guarantee on the processor so users who need to handle huge math computations in the future will be able to replace the chip.

Analysts said they do not expect redesigned chips to ship in volume until at least the second quarter of 1995.

Meanwhile, hardware vendors maintained that the controversy has not affected sales of Pentium systems. According to both Dell Computer Corp. and Gateway 2000, Inc.—the current market leaders in Pentium shipments—there has been no negative impact on demand as a result of the flaw, so far. Most vendors have opened up telephone lines and are qualifying customers for replacements [CW, Dec. 5].

However, several users complained that despite public stances, vendors were asking them to contact Intel directly.

## IBM romances

CONTINUED FROM PAGE 1

even with discounts of up to 50% that IBM has offered since spring on both hardware and software.

IBM also has quietly started negotiating special deals with individual software vendors. Josh Bersin, director of IBM and PowerPC platforms at Sybase, Inc. in Emeryville, Calif., said Sybase and IBM are close to finalizing an agreement to port the development libraries for Sybase's System 10 database to MVS. Included will be price breaks on mainframe equipment beyond IBM's normal discounts for developers, he added.

"Even at 50% off, [mainframe hardware and software] is basically priced for a bank with 1,000 terminals attached, not for 12 programmers writing software," Bersin said.

PeopleSoft, Inc. in Walnut Creek, Calif., is also talking with IBM about ways to cut what it pays a mainframe service bureau for its MVS development work. "We want to cut our cost of doing business in that market," said Frank Strelau, director of channel development at PeopleSoft.

### Ante up

The issue is a critical one for IBM. The computer giant could be saddled with "a going out of business strategy" for the mainframe unless it can win over Unix application vendors to help it find new client/server customer blood, said Charlie Burns, an analyst at Gartner Group, Inc. in Stamford, Conn.

"The ante to play in the [client/

server] game is new applications," Burns said.

IBM's new CMOS-based parallel mainframes "could be departmental machines, but there's nothing to run on them," Burns said. "If that doesn't change, there will be no or very little long-term growth for the System/390."

### How to win users

Joyce Young, a director at Tellabs, Inc., a maker of telecommunication equipment in Lisle, Ill., said getting Unix applications ported to MVS would make the mainframe more believable as a client/server engine—at least to traditional System/390 users.

"There's a lot of concern about the ability of [Unix] platforms to support large, complex applications," Young noted.

Paul Carroll, head of software vendor relations at IBM's Large Scale Computing Division, would not comment about the plans for the System/390 processor. But he said IBM hopes to "drastically resolve" the cost disparities between mainframe and Unix development within six months.

Even so, software vendors were not immediately bowled over. The board-level processor could be useful for testing functionality, "but someone like us needs the genuine mainframe article to fully exploit our software," said Louis Selincourt, director of MVS development at Oracle Corp.

"For the typical Unix application vendor, the cost is going to have to come down dramatically," said Gary Bloom, a vice president at Oracle. "Everything is priced substantially higher in the MVS marketplace than it is in Unix."

## Mail 3.2

CONTINUED FROM PAGE 1

"Microsoft last year had the rapt attention of the Fortune 1,000 companies," said David Ferris, president of Ferris Networks in San Francisco. Even companies with large Lotus Development Corp. CC-Mail installations were looking at Exchange, he said. Now people are wondering whether they will have to wait for Exchange like they did for Windows, he added.

"If Exchange is delayed to meet more of my requirements, it is a good thing," said a user at a large pharmaceutical company, who asked not to be identified. "However, we will probably implement another vendor's product in the meantime but use Microsoft Mail on the desktop." Other possibilities include Digital Equipment Corp.'s Mail-Works or Hewlett-Packard Co.'s Open-Mail.

"I have been disappointed on the timeline with Exchange and feel it's not been made a priority," added a user at a major food products company who also asked not to be named. "I look forward to the robustness and functionality, but it is a long time coming. If we had the luxury to switch, we would."

### Fewer features

Not only is the wait potentially damaging, but Microsoft also seems to be paring down Exchange's features list, said Nina Burns, president of Creative Networks in Palo Alto, Calif.

"The closer we get, the less functionality [Exchange] has. [Microsoft] keeps plugging it with gateways and third-party products," Burns said. For example, Microsoft had indicated earlier that it would offer native Simple Mail Transport Protocol support; now that support will come through gateways.

At the American Bar Association in Chicago, an upgrade to Exchange will depend "on what it brings us," said Arthur Fong, PC LAN manager at the legal association. "We haven't seen a lot of information about Exchange," he added.

Additionally, users are worried about how the product will work in their existing environments. With Exchange, it will be like "going into a brand new world," said Tim Dawes, an information systems manager at London Life Insurance Co. in London, Canada. "We will have to do the same type of rollout as we did with [LAN-based] E-mail," he said.

### Current woes are priority

For Cheryl Wogahn, Microsoft Mail administrator at Yale University in New Haven, Conn., the Exchange server is still an unknown quantity that she has heard little or nothing about. Her more immediate concerns, she said, are current glitches with Microsoft Mail that bedevil her 600 users. For example, Wogahn said messages are sometimes misdelivered, and directories have become corrupted when Versions 3.0 and 3.2 are both running in the same directory.

Users also wonder whether Microsoft's flavor of X.500 will interoperate with other versions from Digital or HP.

"Will they support the protocols that other major X.500 players support, or will I need some custom programming?" wondered the user at the pharmaceutical company. "They say there will be a way to work around it, but I don't want a workaround."

Greg Lobdell, a Microsoft group product manager, said although X.500 initially will not interoperate with directory services from other players, it will have the directory import function, and subsequent releases will provide more interoperability. He also noted that while the initial training costs for Exchange will be high, the ultimate cost of ownership should be lower than other platforms.

A user at a financial management company said he is concerned about having to administer Exchange, which runs on NT, in a Novell, Inc. NetWare environment. Although Microsoft has said administration of Exchange will be much less difficult than that of Microsoft Mail 3.2, there is always some concern about the vendor's "ability to make a reliable product," the user said.

**E  
MAIL**



## Cyber self-help

Having problems communicating with people? You could seek help from a professional, but now all you have to do is log on to your computer for self-help made easy. Me2 is a program designed to help users realize the inborn power of their minds to improve their personal and professional relationships. This ain't no Freud, but the software was developed in conjunction with licensed psychologists. And just like a professional, it even promises to guarantee user privacy — with a password, of course. If you're lucky, your computer won't charge you \$80 for a 50-minute session.

While you're contemplating what the information superhighway can do for your business, why not just crack open a cold one, put your feet up and log on to budweiser.com? This latest addition to the Internet is sure to offer the utmost in riveting corporate conversation.

## Merger Maria

Has Microsoft gone merger-mad? The anonymous author of a phony press release seems to think so. According to the release, Microsoft and the Vatican announced that the software giant will acquire the Roman Catholic Church. If the deal goes through, it will be the first time a computer software company has acquired a major world religion.

## Caviar a la Internet



If you thought all you could get on-line was shareware and electronic newsletters, think again. Worldshop, a new commercial on-line service, offers holiday treats from caviar to handmade leather goods from South America to New England country home furnishings.

WYSIWYG COMPILED BY ERIN CALLAWAY. ILLUSTRATION BY DAVID MARSHALL. WANT TO CONTRIBUTE TO WYSIWYG? SEND US YOUR FAVORITE HOLIDAY CARDS WITH A COMPUTER OR TECHNOLOGY THEME. CONTACT TIM DUFFLEY AT (800) 343-6474 OR VIA THE INTERNET AT TDF@CW.COM

## How to contact Computerworld editors:

	PHONE:	FAX:
Main office, Framingham, Mass. _____	(508) 879-0700	(508) 875-8931
24-hour tip line _____	(508) 820-8555	
Mid-Atlantic bureau, Rochelle Park, N.J. _____	(201) 587-0090	(201) 712-1808
Washington bureau, Washington _____	(202) 347-0134	(202) 347-2365
Midwest bureau, Des Plaines, Ill. _____	(708) 827-4433	(708) 827-9159
West Coast bureau, Burlingame, Calif. _____	(415) 347-0555	(415) 347-6831
Northwest bureau, Bellevue, Wash. _____	(206) 641-7770	(206) 747-1021

✉ **ELECTRONIC MAIL:** Computerworld's writers and editors have individual MCI Mail accounts. Most of our staff members can be reached on MCI Mail by addressing messages to their first and last names as they appear on the masthead, which is opposite the editorial page. For a complete list of editorial MCI Mail addresses, message Linda Gorgone at 597-8014.

✉ Our CompuServe account number is 76537,2413. Please use that account only for communications with writers and editors. Computerworld cannot guarantee response to all inquiries. Direct subscription inquiries to CompuServe: 73373,1230.

✉ **Letters to the editor** and other editorial-related messages can be sent via Internet to letters@cw.com

✉ **CLIENT/SERVER JOURNAL:** Contact Editor Alan Alper at (508) 820-8115 or via Internet at aalper@cw.com

✉ **SUBSCRIPTIONS:** Inquiries and changes of address should be sent to P.O. Box 2043, Marion, Ohio 43305-2403 or call (800) 669-1002.

✉ **REPRINTS:** Contact Sharon Bryant at (508) 820-8125.

✉ **RAPID REFERENCE CLIPPING SERVICE:** (800) 343-6474 x554.

## Inside Lines

### Unix royalty dispute remains hush-hush

If the rumors are true that Microsoft is trying to get rival Novell to pay double the royalties on each copy of UnixWare it sells, neither of the parties are talking. Reports have been circulating that Microsoft wants to boost royalties on UnixWare on Intel from \$10 to \$20. A Microsoft spokeswoman denied that last week, saying, "We are not yet in negotiations with Novell right now over UnixWare on Intel at this time." Novell was equally cryptic, though less ridiculous, calling the whole thing "a confidential business matter."

### Lotus paring down the message

Lotus is expected this week to announce a pared-down version of its Lotus Communications Server (LCS), which will be decoupled from Notes. While this will not affect users in pure CC:Mail or Notes environments, it will affect those with both systems. Those folks will need two servers — CC:Mail and Notes — in a single location; LCS required only one. Also, the company is reportedly going to fish or cut bait on the nature of CC:Mail. Is it an interface? A file-sharing architecture? A floor wax perhaps?

### Pounding the 'Pad for truth and justice

Did anybody notice that Judge Lance Ito changed notebook computers recently? O. J. Simpson's trial judge apparently lost a file from his Toshiba Satellite and went on a rampage of his own, which included calling IBM. The folks in Blueland were more than happy to oblige the judge, allowing him to step to the front of the ThinkPad line and buy a ThinkPad 750C. In other celebrity notes, radio personality Howard Stern is a ThinkPad user (and has been scolded for his language on IBM's ThinkPad forum on CompuServe). Even the pope is rumored to have pounded on the 'Pad.

### Don't hold your breath for NetWare 3.2

Users hoping for an optimized 3.2 release of NetWare that contains nearly all the features in NetWare 4.x — except the Directory Services capability — are in for a disappointment. Richard King, executive vice president of the NetWare Systems Group, last week said "there will be no NetWare 3.2." King also denied that Novell will shelve its Virtual Loadable Modules for clients in favor of the older NetX client shells.

### Product, yes; merger, nah

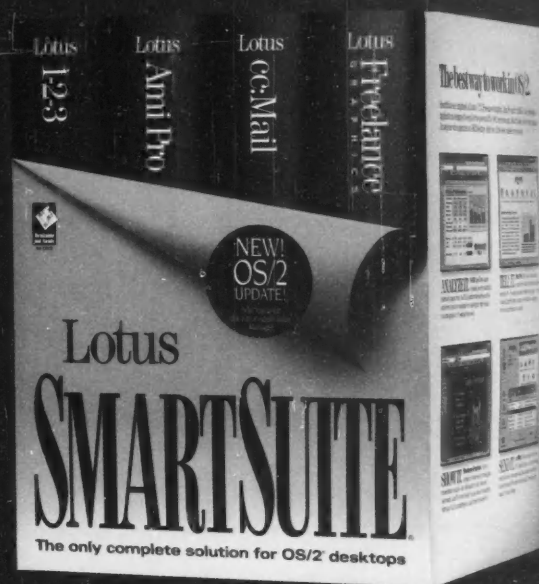
Oracle's much-hyped but little-seen Project X is due to be unveiled Jan. 17, according to a source at Oracle. The single-user database and development tool kit, to be renamed Personal Oracle, will be "aggressively priced" to compete head-to-head with Powersoft's PowerBuilder and Microsoft's Visual Basic. Meanwhile, CEO Larry Ellison last week denied rumors that Oracle is about to buy Lotus. The talk probably started when he and Lotus CEO Jim Manzi dined together a few months ago. At that time, they "joked" about a possible merger, which Ellison then mentioned to the press. Whoops.

### But where's the partridge in a parallel tree?

Mainframe Oracle users got an early Christmas present with the release of Oracle 7.1 for MVS. But maybe they weren't good enough for goodness' sake, because Oracle will not be wrapping full parallel support into the MVS version of the database until the second quarter of 1995. The software out now can split queries across multiple processors in a single system. Still to come is a Parallel Server Option that will let multiple MVS machines access a common database cache via IBM's mainframe coupling facility.

First came the Gross Recreational Vehicles. Then came Cabletron Systems, Inc. with a tidy \$1.2 million spent on developing the LANVAN. The internetworking giant has rolled out three 18-wheelers equipped with all the company's latest gear for multimedia presentations and "hands-on" demos at customer sites. But if print vehicles are your preference, give Computerworld a call about news items or tips. Our 24-hour voice-mail tip line is (508) 820-8555 and our toll-free number is (800) 343-6474. News editor Maryfran Johnson can be reached by phone at (508) 820-8179, via the Internet at mjohnson@cw.com or through MCI Mail at 590-8017.

TO understand the power  
of working  
TOGETHER,  
just check OUT  
WHAT LOTUS  
and IBM CAME  
UP with.



Lotus® has developed SmartSuite.® IBM® has developed OS/2® Warp. Together, the two companies provide a powerful solution for a new and better way of working. SmartSuite 1.1 is the only suite of desktop applications created to take full advantage of the power and speed of the OS/2 operating platform.

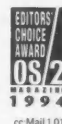
Lotus' 1-2-3® spreadsheet, Ami Pro® word processor, Freelance Graphics® presentation graphics and cc:Mail® electronic mail, are each acknowledged as the best in their class and they've been designed from the ground up to exploit the full potential of IBM's OS/2 Workplace Shell.™

SmartSuite, together with OS/2, offers the highest possible level of product and operating system integration. All applications share a

common interface, including SmartIcons.® All work together to facilitate sharing across or switching between applications. All are workgroup enabled for single-click workgroup collaboration. And all have cross platform capabilities, so work from other platforms is secure and accessible.

With SmartSuite and OS/2, opening, printing, deleting or mailing spreadsheets, documents, presentations and messages are simple drag-and-drop procedures. And, of course, with true multitasking and multithreading, you can be performing any number of these tasks at once.

For more information or to order Lotus SmartSuite or IBM OS/2, call 1-800-3-IBM-OS2.



cc:Mail 1.01



Best New OS/2 Application  
Reader's Choice

**Lotus**  
Working Together



Only ReportSmith  
Gives You . . .

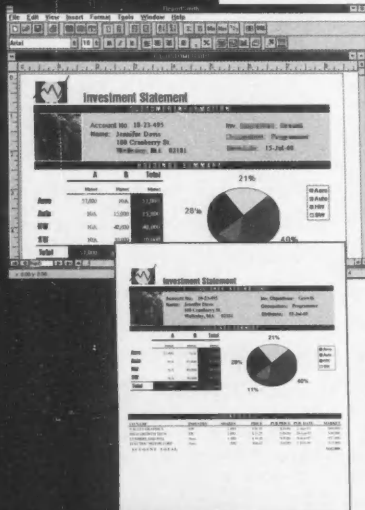
WYSIWYG reports  
from "live" data

Seamless database  
connectivity

Reports from any size  
database

Advanced crosstab  
analysis

Free runtime  
for easy distribution



## New ReportSmith 2.5 The well-connected SQL report writer.

**The easiest way to meet your most demanding reporting requirements.**

Whether you're an occasional user, a power user or an applications developer, you'll quickly discover how fast and easy it is to create reports from your data with new ReportSmith® 2.5. Seamless connectivity to every major SQL and PC database lets you work directly and interactively with the "live" data. And since it's WYSIWYG, there are no more symbols or mock-ups to interpret.

**Combine results from different databases in a single report.**

And that's just the beginning of ReportSmith's Client/Server power. With ReportSmith's memory management technology, you'll get your report finished fast no matter how large the data set. ReportSmith automatically manages memory to give you the best possible performance, and true Client/Server query processing options optimize report production.

**For developers there's more . . . much more.** A Data Dictionary allows you to display meaningful business-oriented names for views, tables, and fields, enabling your users to get the information they need with a minimum of fuss. A built-in macro language and full DDE and OLE 2.0 support help you integrate ReportSmith into other applications. Find out just how fast and easy it is to create spectacular reports with ReportSmith — the well-connected SQL report writer.

**Get Connected Now**  
Call 1-800-336-6464, ext 9628  
In Canada, call 1-800-461-3327



Client/Server  
Solutions  
Reporting and  
Query Tools  
Application  
Development  
Decision Support  
SQL Databases

**Borland**  
The Upsizing Company

